# ALTERNATIVE USE OF WEST COAST INDIGENOUS FORESTS

A Thesis

submitted in partial fulfilment

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of

Doctor of Philosophy in Forestry

by

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To
Moira, Fiona and Ingrid
with love and appreciation.

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PHOTOS.

All photos by A J Tilling unless otherwise noted.

## ABSTRACT.

This is an holistic, interdisciplinary overview of indigenous forest management on the West Coast of the South Island, New Zealand. It touches on the twin pillars of New Zealand State indigenous forest policy for nearly half a century: multiple-use management and sustained-yield forestry. These were not satisfactorily achieved and most lowland forests were converted to other uses, except on the West Coast. Environmentalist pressure finally forced the curtailment of logging. A fundamental development question is thus raised: are there alternative commercial uses which can be nurtured to provide income and employment on the West Coast, yet still maintain environmental integrity?

A socio-economic survey of alternative forest-based users was carried out and former Directors-General of Forestry were interviewed. Many local people were consulted. A financial analysis of selected users was undertaken. Resource information was obtained from this group and from secondary sources. A decision-making framework was used to analyse why seemingly well-intentioned plans by the New Zealand Forest Service never materialised and to put alternative forest-based users in a regional, national and international context of power relationships.

Market-led economic philosophy, adopted by governments is inappropriate in dealing with conflicts over resource use and the need for long-term management. Government intervention has led to the legal protection of most lowland West Coast indigenous forests. This is only a first step, as management of resources leaves a lot to be desired. But, alternative forest-based users are few and powerless, being reliant on distant markets: most are at the mercy of foreign buyers and commodity traders.

Increased management and a move away from forest-based activities would foster local economic security, but this would reduce the role of users in controlling browsing animals. Closer co-operation between resource users and bureaucratic decision-makers could bring mutual benefits. An approach which offers promise is social forestry.

Social forestry may help to conserve resources and make optimum use of limited finances, but it is insufficient to resolve the wider development dilemma.

# CHAPTER 1. INTRODUCTION.

## 1.1 Introduction.

This chapter sets out the rationale for the study. It outlines the increasing world-wide concern about deforestation and its detrimental impact. Whilst the global situation is alarming, New Zealand and the West Coast of the South Island have not escaped this process and cannot be held up as an exemplar of successful indigenous forest management. There are many reasons for this. Nevertheless, New Zealand has had a very successful plantation forestry programme with exotic species and is one of the few countries in the world which has become self-sufficient in timber and wood-fibre. A lucrative export industry has resulted and the country is now on the brink of a new era of expansion, as plantation output is expected to double by the turn of the century and triple by the year 2015. This phenomenon is based on long held plans dating back to the beginning of the century when indigenous forests were being quickly depleted. However, while afforestation was underway with exotic species, there was a determined effort by the New Zealand Forest Service to maintain indigenous timber supplies until plantation output was sufficient. This subordinated the value of other forest management strategies. The situation changed as timber shortages eased during the 1960's and environmental awareness increased in the latter part of that decade. The New Zealand Forest Service (NZFS) as the agent of the government, did not keep abreast with rising demands to curtail indigenous logging, bringing about a confrontation between environmentalists and foresters. Although more and more forests were set aside in reserves and national parks, pressures to preserve the remaining indigenous forests increased. The focus was on the West Coast of the South Island as this is where the greatest expanse of these forests were and are to this day. A wide range of government departments, local government organisations and lobby groups have been involved in a confrontation over the use of these forests. The Labour Government finally stepped in to resolve the conflict, favouring preservation rather than extending logging operations. This has produced a classic development problem: how are the local people in the depressed region of the West Coast to earn a living? Tourism and environmentally benign industries are advocated by environmentalists, but these are at present in an embryonic state. Coasters want development now, not in some far off future. Hence, it was decided to study alternative forest-based activities and the people involved in them. But the future of these activities has been affected by a radical change in the Government's economic philosophy. This is developed in some detail as it forms a backdrop to the study.

## 1.2 Global Forests and Deforestation.

Forests cover approximately a quarter of the planet's land surface and tend to support greater stocks of biomass and harbour a greater abundance of animal and plant species than any other ecological zone. They are thus an invaluable genetic reservoir. Furthermore, forests are not only basic to biospherical processes such as photosynthesis and energy transfer but play a crucial role in the recycling of carbon, nitrogen and oxygen. They help to determine climate and regulate and control water run-off and soil erosion (Myers, 1985; Miller and Armstrong, 1982).

Apart from having these multiple bio-physical attributes, forests have been part of man's environment ever since he first emerged on this planet. Hermann (1975) states succinctly that forests have shaped man's destiny as he has theirs. This is partly because of the many values derived from forests, be they material, such as wood and food, or intrinsic, cultural or spiritual (Hermann, 1975; Burch, 1979; FAO, 1981; Poulsen, 1982; Reunala, 1984). But as human populations multiplied and demands for food increased, man has cleared forests for pasture and arable land. Forests have thus been modified and depleted, whilst man has, on the whole, adapted to this changing environment. This has not been without considerable cost, as extensive areas of once forested land subsequently became exhausted. Populations were forced to move on, as they did from North Africa, once the granary of the Roman Empire.

These changes took place over millenia. There was always a new frontier: new lands and forests to be exploited. Hence, the exhaustion of timber supplies led to the shift of shipbuilding from southern to northern Europe. By the 16$^{th}$ and 17$^{th}$ centuries however, acute timber shortages were being experienced in Europe leading eventually to the sustained-yield management of some forests in Germany and France. Fortuitously, the Age of Discovery heralded the availability of seemingly inexhaustible supplies of timber from the New World.

Timber and wood fibre for building, commercial and industrial use became the pre-eminent extractable and tradeable forest resources, as they are generally transportable, durable and transformable into a wide variety of products. For instance, long before first European settlement the crew of the "Fancy" spent three months in New Zealand in 1795 cutting some 300 kahikatea (*Dacrycarpus dacrydioides*) spars before returning to Sydney (Northcote-Bade, 1971).

But of course the golden age could not last. The demand for timber and wood fibre and the clearance of forests for pasture and arable land increased at an inexorable rate, especially since the Industrial Revolution, but more particularly during the last fifty

years as the world's population has increased at an exponential rate (from 2 billion in 1930, 3 billion in 1960, 4 billion in 1976, to the present 5 billion). There are now few new frontiers. Old World forests were decimated over thousands of years. Temperate and semi-tropical forests in the New World were cleared in two to three hundred years. Now the once inaccessible tropical forests are being cleared in a matter of decades. It is claimed that more than half the world's tropical forests have disappeared since the turn of the century (Leach, 1987) though the rate of deforestation is contentious. Myers (1985) states that approximately 12 million ha of the world's forests are destroyed each year, almost all of which are tropical forests. Peccei (1981) asserts that at the present rate of clearance, the remaining area of unlogged productive tropical forest will be halved by the end of the century. Lanly and Clement (1982) are more conservative. They conclude that 140 million ha of tropical closed forests will be removed over 25 years. Nevertheless, they predict that net removals of industrial wood will be about 2.5 times those of 1975 by the year 2000.

The effect on some countries has been devastating. The Ivory Coast is reported to be losing 300,000 ha of forests each year and to now have only one-tenth of its former forest cover (Killen, 1988). Irreversible changes to the environment are taking place, causing world-wide concern. Although reforestation could rectify this situation, it is proceeding at far too slow a pace, except in a few exceptional cases largely outside the tropics. Present success with tropical plantations has been limited (Hunter, 1984).

The decimation of forests destroys or threatens whole ecosystems and human life, both directly or indirectly, as the impacts are often felt many kilometres downstream, resulting, for instance, in increased frequency and magnitude of floods, as in the Ganges plain. Adverse consequences are now global, for example, forest fires are causing atmospheric pollution, contributing to global warming and the greenhouse effect.

A large and growing segment of the world community is beginning to realise that mankind has now got to live within environmental limits. Nevertheless, world leaders have been slow to take drastic remedial action, being constantly diverted by other seemingly more pressing issues, such as balance of payments and employment crises.

Too narrow a view of development has been taken by politicians and their policy advisers. It has been erroneously equated with economic growth, which has become the dominant measure of progress. Although resource consumption is necessary to sustain human life, the potential of mass production led to the promotion and realisation of mass consumption; the basis of 'modern' economies. Product durability was eschewed; built-in obsolescence became the norm. Consumerism and utilitarianism became acceptable

philosophies. An economic, or "use it" ethic was one consequence (Miller and Armstrong 1982). This did not necessarily include the renewing of resources and can be typified as a consumptive attitude to resource use, by which forests, for instance, can be converted to their 'best' or 'highest' (i.e. most economic or profitable) use. In juxtaposition, and partly in reaction to the consumptive school, are those at the opposite extreme who favour the preservation or 'non-consumption' of resources. In between these two groups are those who take a mixed approach depending on the circumstances of particular cases. However, increasing ecological concern has brought about a growing confrontation between the consumptive and non-consumptive schools, polarising their respective positions. This has occurred in many parts of the world, including New Zealand.

The inter-dependence between economic development and the natural environment has become more and more blurred amongst those adherents of the dominant economic paradigm. This has precipitated many environmental crises, which are basically a reflection of human values: the seemingly unsatisfied demands for material goods or natural products without explicit thought or concern for their sustained supply or their safe disposal (Miller and Armstrong, 1982). The schism between social values and attitudes and ecological conditions has been ignored, gone unrecognised or thought capable of being resolved by the application of modern science and technology (Ophuls 1977). Unfortunately, the latter has not often helped; in many instances it has made the problem worse, e.g. nuclear power and waste disposal and the detrimental consequences of artificially trying to increase primary production through the application of synthetic non-biodegradable fertilisers, pesticides and herbicides.[1]

## 1.3 New Zealand Forests.

As in other parts of the world, natural resources in New Zealand have been 'mined' and wasted. Indigenous forests are a prime example. Forest resources were exploited by the Maori prior to the Treaty of Waitangi in 1840.[2] The loss of indigenous forests prior to 1840 was considerable. However, the level and rate of development has accelerated since European contact and the establishment of full-scale commercial trade. European settlers and Maori alike actively cleared the land. Between 1840 and 1983 approximately 7.8 million ha was cleared, representing 53% of the total forest cleared since the arrival of the Maori in New Zealand about 1000 years ago (see Chapter 4). The result is that only about 6 million ha (23%) of the country now remains in

1 This is not to say that there is no awareness of of environmental problems or the link between the environment and economic development, but that governments have been slow to match awareness with positive actions (see Tolba, 1987).

indigenous forest. Significant areas of these forests were set aside under the provisions of the Land Act 1877 (Froude, *et al* ,1985) and further protected by the Forest Service. Hence recent conflict has revolved around the clearance of the remaining "merchantable lowland" forests.

The remarkable feature of New Zealand forestry was the early recognition that indigenous timber supplies would be exhausted unless an afforestation programme with faster growing, more productive exotic species was undertaken. Large scale plantings were undertaken between 1920-1930 and again between 1960-1980. As a result, plantation output increased dramatically, allowing indigenous removals to be progressively reduced after 1960.

The steady increase in plantation output gave the New Zealand Forest Service (NZFS) the opportunity to preserve the indigenous forest estate under its control. However, it persisted with logging lowland indigenous forests, and though it did designate some as Forest Parks and agree to others being managed as national parks, this did not satisfy environmentalists. Forests under greatest contention were predominantly located on the West Coast.

## 1.4 The West Coast.

The West Coast is a long, narrow stretch of country of 2.29 million ha in area[3], 520 km in length and between 30 to 80 km in width on the West Coast on the South Island (see Map 1, Appendix 2). It is remote and peripheral to the rest of New Zealand, being separated from Nelson by the Tasman Mountains and from Canterbury and Otago by the Southern Alps.

Fifty three percent of the population of 33,702 is located in the boroughs of Greymouth (7272), Runanga (1338), Hokitika (3345), Westport (4611) and Reefton (1203): the rest is scattered over the narrow coastal plain.[4] Numbers have remained relatively static over the past ten years, but fluctuated considerably before then. There have been periods of considerable out-migration. The region relies on a narrow, primary industry base and appears to have little prospect of diversifying its economy, which is controlled by externally based organisations and entrepreneurs. In common with some other remote regions of New Zealand, it is an area of relative socio-economic depression

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2 The Treaty ceded sovereignty of New Zealand to the Queen of England in exchange for specific rights.

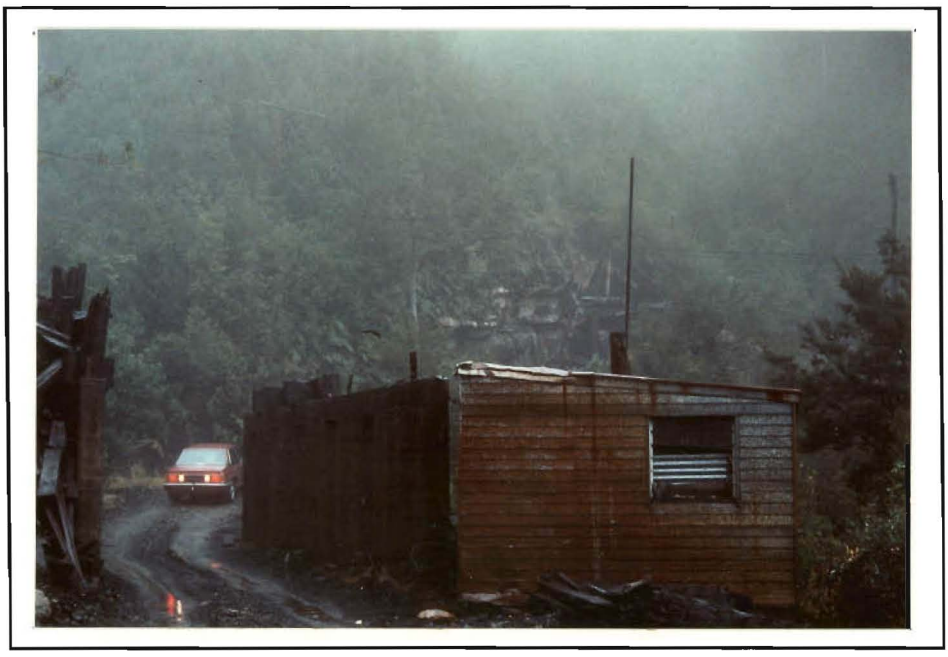
3 This figure was obtained from the West Coast United Council (1980). The Department of Conservation estimate is somewhat different. It estimates that the West Coast Region is 2.427 million hectares [compiled without the benefit of a detailed land register and therefore approximate] (Gilbertson, 1989). The significance of this difference will be explained later.

4 Figures from the 1986 Census of Population and Dwellings. Wellington, Government Printer.

(West Coast Committee of Inquiry, 1960; West Coast United Council, 1984a). A factor analysis used by Taylor (1976) to define dimensions of regional inequality suggested that the West Coast was, jointly with Nelson, the most 'socially and economically depressed' region of the country and that, together with the East Cape, the West Coast was the most disadvantaged region on all the dimensions of economic health used in the analysis. (The study grouped Buller County with the Nelson region, though it was noted that Nelson's similarly poor performance on the social and economic measure probably reflected the problems encountered in areas not adjacent to Golden and Tasman Bays. These other areas would have included the Buller). Since this analysis, regional inequalities have increased, not diminished.

Southern Alps and the Haast River, South Westland.

The recent history of the West Coast has also been marked by the exploitation of natural resources. Before the arrival of Europeans, the Maori hunted and gathered food on the Coast and also travelled there for highly prized pounamu (greenstone) for tool making, ceremonial and ornamental work. In contrast to other parts of New Zealand, their impact on the physical environment of the West Coast was relatively slight. Following European settlement, greenstone and other natural resources, such as gold, coal, the marine fishery and indigenous forests were exploited. The population fluctuated considerably, following the "discovery" and rapid depletion of some resources, especially gold. Settlements sprang up and were quickly deserted.



Coal mine, Ten Mile Creek, north of Greymouth.

Approximately 19% (1.2 million ha) of New Zealand's indigenous forests are located on the West Coast, though 40% of the "merchantable" lowland forests are found there (Kirkland and Trotman, 1974). The latter fall into two main groups, beech (*Nothofagus* species) and podocarps. The former are mainly located in the Grey and Buller river catchments, whilst most of the remaining podocarp forests with timber potential are located in South Westland. The bulk of the nation's indigenous timber is produced from the northern part of this area, around Harihari, as there has been a moratorium on logging from public forests south of the Cook river whilst their fate was being decided on by the Government. These southern forests have recently (1989) been protected from future logging and are in the processes of being nominated for World Heritage status.

Timber production has been a significant part of the West Coast economy since the early days of European settlement, reaching a peak in 1926. Output fell between the two World Wars but had an upward trend until 1960. Since then the trend has been downwards, reaching about 78,000 $m^3$ in 1987 (Ministry of Forestry, 1988).[5]

This decline has partly been the result of:

i) the declining per capita consumption of solid timber,

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5 In 1926, indigenous rough sawn output was 314,000 $m^3$ in the South Island, whereas it was 500,000 $m^3$ in the North Island. In 1960, S.Island output was 264,000 $m^3$ (N.Is. 536,000 $m^3$) and in 1987 it declined to 86,000 $m^3$ (N.Is. 26,000 $m^3$). Clifton (1988) estimates that the West Coast now accounts for 90% of the South Island's indigenous sawn output.

ii) the competition from radiata pine as a framing timber after 1960, especially following the removal of price controls on indigenous timber in 1979, and

iii) the reduction in availability, as more areas of forest were protected by national park status (Tilling and Clifton, 1984).

There was however a great deal of wasted timber (over 90% of cleared indigenous forests in New Zealand was burnt in order to establish pasture). Furthermore, timber recovery and sawmilling practices were very inefficient. As the long-term management of indigenous forests was far from satisfactory, despite sustained-yield and multiple-use policies, the region has been the focus of increasing conflict between environmental groups and timber interests. Multiple-use policies seemed to favour timber production and hence became a discredited concept amongst environmentalists (see Chapter 4).

Thus, an alternative form of protection was pursued by environmentalists. They favoured the non-consumption of indigenous forests and pressed for formal reservation which would exclude logging or conversion to other non-forestry land uses. Reservation carries statutory weight and has proved to be the most secure means of protecting the forest. Thus, 17000 ha was bought in Otira Valley in 1901, which became Arthurs Pass National Park in 1921. Westland National Park had long been a scenic reserve, before it too was constituted a national park in 1960. Following a general environmental awakening in New Zealand at the end of the 1960's, North-West Nelson Forest Park of 405,765 ha was established in 1970, part of which is in the West Coast region. The pressure for the protection of more forests gathered pace in the 1970's, with the result that a further 14 forest parks were set up in the rest of New Zealand during that decade. It was not until 1981 that further protection was afforded to West Coast forests, with the establishment of Victoria Forest Park (210,731 ha). In the same year, South Okarito and Waikukupa forests were added to Westland National Park bringing its total area to 117,547 ha (Ministry of Forestry, 1988). Further changes were also in store.

Almost coincidental to the beginning of this research project, the Government adopted recommendations of a committee chaired by the Secretary for the Environment (1986b) [the Blakeley Committee] on the allocation of indigenous forests on the West Coast. This committee was to settle the long-running conflict between those who wished to see a continuation of logging north of the Cook river (i.e. those with a consumptive ethic) and those who advocated the further preservation of indigenous forests (the non-consumptive group). The latter were largely successful in realising their objectives: the Government endorsed the committees' recommendations, reducing the area suitable for

timber production from 287,000 ha to 121,000 ha, and gazetting Paparoa National Park (28,000 ha) in 1987.[6]

Environmental groups then focussed on the more substantive issue of logging south of the Cook river. This was investigated by another committee chaired by the Secretary for the Environment. Although the working party agreed that 291,000 ha of the 311,000 ha of State forest under study should be preserved, it was divided on the allocation of the remainder. Representatives of the Department of Conservation (DOC) and the Joint Campaign on Native Forests opposed any logging, whilst the other 10 representatives voted for an evaluation for "sustained ecosystem management" [principally logging] (Ministry for the Environment, 1988a). Nevertheless, the Government adopted the minority view (Minister for the Environment, 1989a).

Environmentalists assert that preservation is not only good ecological sense but also provides the Coast with a priceless economic asset, to be realised by tourism. However, tourism is not necessarily a panacea, as it has to be successfully promoted and then carefully managed to ensure that it is within the carrying capacity of the environment. The fact remains: the economic development on the Coast is largely dependent on the natural environment. Historically there has been little need for environmental concern, but since the European era resources such as gold, the in-shore fishery and indigenous forests have been severely depleted. Whilst reserves of stock resources were in fixed supply, the fisheries and forest resources could theoretically have been managed to provide a perpetual harvest, as they are renewable resources. That they were not is now a major reason for conflict. Hence, sustained-yield management is seen as a highly desirable option, if not a necessity, by environmentalists and some resource managers.

However, sustained-yield management means different things to different people. In a narrow sense it can mean harvesting no more than at the natural rate of replenishment, taking account of natural or man-induced catastrophes or mishaps. More formally, it can be thought of as a conscious or deliberate attempt to manage ecosystems so as to provide perpetual, long-term net benefits to man, nature and biophysical processes. This recognises the ultimate interdependence of humans, other fauna, flora and biophysical systems on the maintenance or enhancement, rather than irreversible depletion, of natural resources and the necessity to minimise environmental degradation. This implies a thorough knowledge of the characteristics and behaviour of

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6 National Parks have become an important part of many New Zealander's psyche. 1988 marked the centenary of the establishment of the first park, in the central North Island. In the main, these parks are in remoter parts of the country, protecting relatively unmodified natural environments.

natural systems and an appreciation of the nature and level of demands placed on them, from both a temporal and spatial perspective. Because knowledge is imperfect and future states unknown or uncertain, absolute standards are inappropriate. Value judgements and trade-offs are necessary, though one can generalise about universally recognisable benefits, such as leaving the next generation no worse off than the present (Baines, *et al*, 1988).

In the case of West Coast indigenous 'production' forests, the most obvious trade-off is between the desire for immediate gains from logging, with the almost certain irreversible loss of further forests versus longer term, enduring benefits accruing from the sustained-use of these forest (including aesthetic appreciation and other non-monetary values), but with lower present sawlog yields and associated benefits until alternative benign economic uses are fully realised. Although the Government has acknowledged the latter and, hence, agreed with environmentalists, it has also reached a compromise with sawmilling interests over forests north of the Cook river. Neither complete sustained-yield production nor entire preservation has been approved. Hence, timber allocation has been extended in some areas, but as large areas have been set aside for national parks and reserves, clear-felling has been permitted in forests such as Ianthe forest, previously set aside for sustained-yield production. However, there has been continued pressures by the West Coast United Council and others to extend clear-felling well into the next century until plantation species mature. (These plantations were only started in the 1960's). Environmentalists have heard this argument before and say enough is enough. They have already partially compromised on the clear-felling issue. In addition, most environmental groups support limited beech management (*Nothofagus* species) for timber and wood fibre in the Grey valley. This has been approved on a sustained-yield basis, but from a much reduced area than that originally proposed in the 1970's. Unfortunately for those seeking work and a boost to the regional economy, no development proposal has been approved, even though tenders were called for in 1987. In total, a little over 120,000 ha has been allocated for timber production, with roughly 60,000-65,000 ha of this being presently thought suitable for beech management (Secretary for the Environment, 1986b; Gillions, 1989).

## 1.5 Development and Government Philosophy.

The allocation of large areas of indigenous forest for 'protection' purposes and the decline in logging poses a development dilemma in the widest sense. Other options, such as tourism are being promoted, but forest-based tourism is presently relatively small in scale and localised and unlikely immediately to replace jobs that have recently been lost. Coasters want jobs today and not in some long distance future. The employment situation is bleak. Yet their plight seems to have been ignored. The

Fourth Labour Government has adopted a 'hands-off' approach: unlike previous administrations which have given assistance to depressed regions, the present Labour Government has been opposed to 'propping-up' ailing regions and businesses and has introduced charges for government services. The paradoxical reason for this stance, from a so-called Labour administration, needs some elaboration.

New Zealand is a nation which has achieved a comparatively high standard of living from trading with the rest of the world, as its domestic market is small. When Britain was recovering from the Second World War, New Zealand was in a particularly favourable position to supply this market with primary products, and a special, reciprocal, political and trading relationship flourished. At the same time, New Zealand also built up its own manufacturing industries, protected from competition by trade barriers and quotas on imports. Europe was decimated by war and S.E.Asia was still to emerge as a significant international trading force. From its isolationist position prior to Pearl Harbour, the US began to take an outward view as the pre-eminent super-power, but was relatively slow to flex its muscles in international trade.

But the world changed rapidly. Europe recovered and the US and Japan became major exporters. Despite the ideals of the General Agreement on Tariffs and Trade (GATT), vigorously pushed by the US, Britain sought refuge in the European Community (EC). New Zealand found its special trading and political relationship in jeopardy. Despite her comparative advantage in primary production, she began to be excluded from her traditional market, as the Common Agricultural Policy fostered the production of agricultural surpluses. Similarly, measures to support US agriculture produced surpluses. Both the EC and the US have off-loaded these primary product surpluses on world markets, at subsidised prices, hampering New Zealand's trading efforts.

And so, New Zealand's international comparative advantage in sheep and dairying has been frustrated by protectionist and price support policies in existing and potential markets. Thus, New Zealand has fought a rear-guard action to maintain access to markets and has extolled the virtues of free trade.[7]

Successive governments have perpetuated the myth that New Zealand can aspire to the material affluence of Europe, Japan and the US, even though New Zealand now finds herself a middle ranking nation, in terms of GNP per head of population, instead of being in the top handful of countries in the 1950's. Although the New Zealand economy depended on the export of primary products and the nurture of domestic

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7 However, she has also became part of a larger trading block herself, by an arrangement called Closer Economic Relations (CER) with Australia. This is designed to reduce trade barriers between the two countries, behind a common, external tariff wall.

manufacturing after the Second World War, more recently, diversification and export-led growth has been promoted by successive governments as the key to future affluence. Despite the oil shocks of the 1970's, the Muldoon era was marked by the promotion of capital intensive industrial projects and overseas borrowing to support domestic consumption: New Zealanders, weaned on the 'good life', were led to believe it could continue. They were in for a rude shock in 1984, when the Fourth Labour Government came to power. The economy was in a mess.

The new government was immediately plunged into a currency and constitutional crisis and responded with radical economic measures. It adopted "liberal" economic policies which Rosenberg, (1986) says are further removed from Labour traditions than any Labour voter would ever have expected. They are more laissez-faire than former conservative National governments have implemented. Boston and Holland (1987) aptly say that these new policies have brought a revolution that has affected, to varying degrees, all aspects of New Zealand society.[8]

The announcement of the impending general election had already led to a run on the dollar. Spot sales in the month before the election totalled nearly $1.4 billion. By election day there was only about $900 million total overseas reserves left, sufficient to last less than a week at the the outflow rate of the previous week. On top of this, a leaked IMF report just before the election revealed that the fiscal deficit for 1983-84 was about 9.25% of GDP (Douglas and Callen, 1987; Easton, 1987). Overseas debt was 49% of GDP, 65% ($14.21 billion) of which was official Government debt. Not surprisingly, after being fully appraised of the state of the economy by Treasury, the Labour Government took drastic action. It began implementing even more extreme economic policies than Douglas had previously proposed (Douglas, 1980). Nevertheless, these were vigorously championed by the Minister of Finance and became known as "Rogernomics".

The Government was committed to restructuring expenditure and revenue. It was determined to free the economy of 'bureaucratic' controls, placing greater reliance on market forces to allocate goods and services (unlike previous Labour governments' interventionist policies). The dollar was devalued by 20% and subsequently floated. Controls on interest rates were removed, as were those requiring institutions to invest

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8 Some of the seeds of this change had been made explicit by Roger Douglas (1980) when, as an Opposition Member of Parliament, he produced an 'Alternative Budget'. This was so contrary to traditional Labour Party philosophy that he was relegated to the end of the second row on the Opposition benches (Douglas and Callen, 1987). However, after the loss of the 1981 General Election, Bill Rowling stepped down as Leader of the Labour Opposition and Douglas became the shadow spokesman for Finance. On the defeat of the National Party in the 1984 election, he subsequently became Minister of Finance.

fixed ratios of their assets with the Reserve Bank. Export incentives were abolished and a schedule for phasing out import licensing and reducing tariff protection was introduced, amongst other measures. Economic efficiency, cost-cutting and 'users-pays' became the orders of the day.

Of course, central government policies have implications for regions. But, as market mechanisms were substantially allowed to allocate goods and services and intervention was anathema to the Government, selective policies to help depressed regions became irrelevant. Rosenberg (1986) remarked: "...our (neo-classical) economists have no solution for (such) disaster regions, except abandoning these regions or their theories". As the Prime Minister, David Lange, stated at a regional development forum in Gisborne in 1986:

> *Regional development in the traditional sense is turned on its head. Central Government should not decide what is best for a region. It's your region. You know it best. It's up to you to identify the potential and opportunities that exist here, and to use it to your advantage.*
>
> *...a very necessary factor* (is) *required to achieve success: It's crucial in regions passing through the turning point of change. I call this factor the "confidence barrier". We have to create the environment whereby businesses of all kinds can have a go on their own terms, not with the prop of subsidies or subsidised protection.*

The Minister of Finance, at the same forum, drove the point home:

> *By dismantling subsidies and tax breaks across the board, we are putting a premium on our own natural resources. Most of those resources aren't in the cities: they are out in the regions. To process them you have to locate alongside the resource. Those new industries are going to be commercial. They are going to be competitive. They <u>have</u> to be* (his emphasis).

Thus, the Government abolished its regional development loans for capital costs of projects in specified priority regions. It retained investigation grants, emphasising the importance of thorough studies of the technical feasibility or commercial viability of potential activities in regions. But in doing so it abolished the differential between priority and non-priority regions in 1987, making grant assistance a uniform 50% of qualifying costs.

The regions were left to their own initiatives, yet at the same time they had to contend with further externally generated, Government initiated, changes. Long before the Labour Government was elected to office, there were general complaints about the alleged inefficient nature of the Civil Service (a satirical comedy called 'Gliding On' had been a success on national television). Lange had already hinted that, if elected, Labour would 'shake out the whole system'. His views coincided with those of the Treasury,

which in 1986 diagnosed that the problem with public administration lay in the lack of clear, non-conflicting objectives and the requirement to provide for economic and non-economic aims, such as employment creation. State organisations had been given commercial advantages, such as monopoly powers and subsidised finance to achieve these objectives, but these did not meet Treasury's notion of efficiency (Gregory, 1987). Treasury officials were reportedly unhappy with the performance of the NZFS, which ran large annual deficits (Clawson, 1988; Fischman and Nagle, 1989). *Inter alia*, they recommended the separation of policy and regulatory functions from trading activities. Such was the influence of Treasury that, in 1986, the Government began to embark on a programme to restructure government departments. In this 'rationalisation' process, a number of departments were made into corporations (known as State Owned Enterprises or SOE's) whilst the functions of others were amalgamated.

Of paramount significance to the West Coast because of the land area they controlled and the employment they provided, was the restructuring of the Department of Lands and Survey (DL&S) and the New Zealand Forest Service (NZFS). They became five different organisations on 1 April 1987. The commercial aspects of the latter became the responsibility of the New Zealand Forestry Corporation, whilst non-timber functions were largely transferred to the Department of Conservation (DOC).

On the announcement of the personnel requirements for these five new departments in November 1986, it appeared that 64 staff positions and 250 wage-worker jobs would be lost from the re-organisation of the Department of Lands and Survey (DL&S) and the New Zealand Forest Service (NZFS) on the West Coast alone. Considerable confusion and uncertainty arose over the number of jobs likely to be available and the re-deployment of existing staff, as new positions were advertised and open to competition from within the Civil Service. The outcome was a little less severe than predicted, with an apparent drop in employment opportunities from 569 jobs in March 1987 (including staff from the Wildlife Service, Department of Internal Affairs) to 283 jobs once the new organisations were in existence in April 1987. This was a 50% drop in employment opportunities, though in the longer term the number of jobs in these new organisations was projected to increase to 340 (Eastwood and Hansen, 1987).[9] Of the total West Coast NZFS complement of 388 employees on 31 March 1987, the last day of service, 283 had "agreed" to take voluntary severance, the remainder accepting

9 There is some contention over the total complement employed in March 1987. Allowing for a lower total of 528, this would give a 87% drop in job opportunities. The projected increase in employment opportunities had not eventuated by the end of 1988. In fact some temporary staff were laid off by DOC in 1988 as a result of budget cuts. The budget allocation for the department on the West Coast was reduced from $7,648,150 for 1987-88 to $6,036,000 for 1988-89. Actual expenditure in 1987-88 was $7,808,215 (Richards, 1988). Plans were afoot to sell the commercial aspects of the Land Corporation to the private sector, hence reducing the need for Corporation staff.

positions in the newly created Forestry Corporation, Department of Conservation (DOC) or the Department of Survey and Land Information (DOSLI).

All these new positions were not necessarily located on the West Coast as a national restructuring of these departments was taking place. Hence, there was considerable nation-wide relocation of personnel and little continuity of expertise, even though similar jobs were re-created in the new departments.[10]

Furthermore, the job losses did not include those projected to result from the restructuring of other government agencies, especially from State Coal where 201 jobs were being lost on the West Coast. Taking account of these, plus indirect job losses associated with them, the West Coast United Council predicted that there would be 904 fewer jobs in the region between 1987-1988, representing 7.3% of the (then) current workforce (Eastwood and Hansen, 1987).

As these events happened during a period of tight monetary policy enforced by the Government to reduce the level of inflation and government debt, the New Zealand and West Coast economies went into deep recession: the re-structuring process making matters worse. Unemployment increased dramatically, as shown in Figure 1.1, overleaf:[11]

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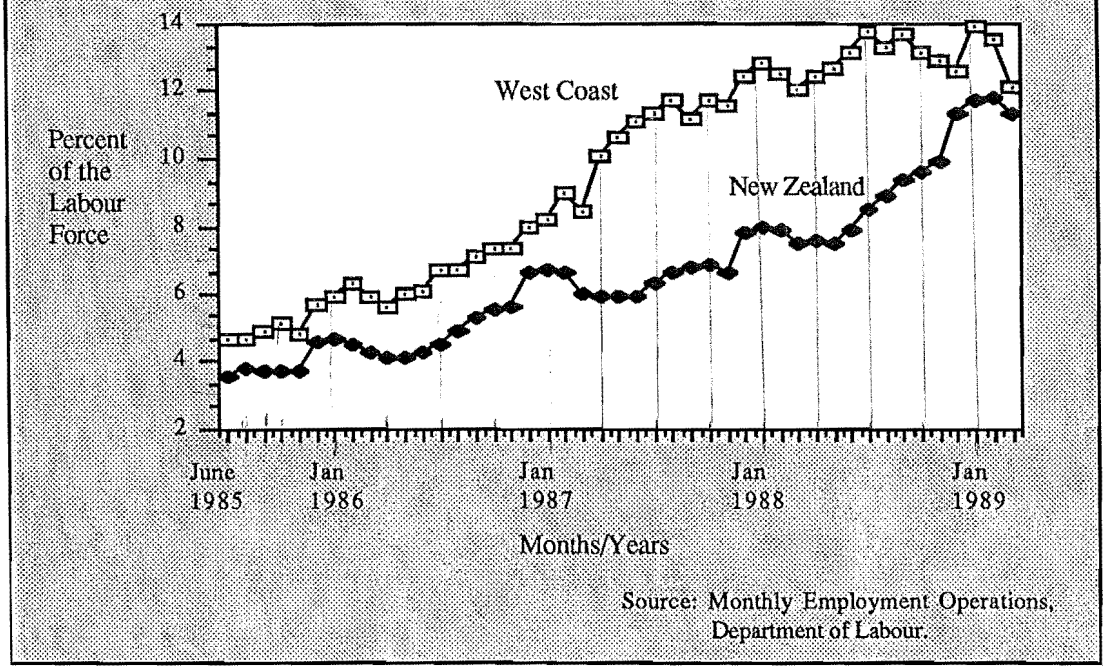
10 None of the personnel directly responsible for alternative forest-based resources in the former Department of Lands and Survey and NZ Forest Service on the West Coast were carried over into similar jobs in DOC West Coast Region, and only one person had similar responsibilities for these resources in the Forestry Corporation and Land Corporation respectively.

11 By February 1989 the total number of registered unemployed in New Zealand had reached 157,797, of which 1608 were on the West Coast. These figures were lower than the previous month principally because of seasonal factors and the fact that the Government changed the re-registering period at unemployment offices from every 4 weeks to every 6 weeks. In addition to the registered unemployed, there were 5833 people nationally on partly assisted employment schemes (82 on the West Coast) and 1133 on fully assisted schemes (16 on the West Coast). Furthermore, more than 14,000 people were on assisted training schemes, with over 300 on the West Coast). Not surprisingly, in the April 1, 1989 Heylen opinion poll, disapproval of the Government's handling of unemployment was 86% of those polled and David Lange's rating as the 'preferred Prime Minister' fell to 14%, five percentage points behind the Opposition's front runner, Winston Peters. 58% of those polled expressed a preference for a National government, compared with 34% for the existing Labour administration (Christchurch, *The Press*, 6 April, 1989). These figures continued a downward trend in popularity for the Government, which had been apparent the year before, leading to considerable tension between the Labour Party and the Labour Caucus and within Caucus itself. Lange was known to be more moderate than his Finance Minister and his Associate, Richard Prebble, who was also the Minister of State Owned Enterprises. Disagreements came to a head in late 1988 when Prebble was forced to resign following inept attempts to privatise the Bank of New Zealand and Air New Zealand. He was followed by his Associate, Trevor De Cleene, who resigned 'in sympathy'. Finally, in December 1988 the Minister of Finance, Roger Douglas, announced that he could no longer work with the Prime Minister. He was replaced as Minister of Finance by David Caygill. Although professing to continue the policies of his predecessor, Caygill is perceived to be less of a monetarist. Only time will tell whether this proves to be correct.

Figure 1.1. Registered Unemployed




Source: Monthly Employment Operations, Department of Labour.

The reality is that there are few short term employment opportunities on the West Coast. Ironically for those desperately seeking work, Government policies and environmentalist pressures appear to be making the situation worse. The range of job opportunities is restricted. This is a particular problem for school leavers: the increase in numbers on Government financed training schemes was nearly three times the national rate between June 1986 and October 1988. Not surprising, many young adults leave the Coast.

## 1.6 Need to Explore Alternative Opportunities.

The depressed and deteriorating socio-economic situation on the West Coast raises questions about future prospects for a region which has long suffered from resource booms and subsequent collapses. Traditional indigenous forestry activities are now a fraction of what they once were and are destined to an uncertain future as present forest allocations expire in 1989. Hence, one immediate practical question is: can alternative jobs and income be generated from the sustained, non-timber use of indigenous forests? Will local people and the West Coast economy be the principal beneficiaries or will non-Coast interests usurp the benefits of change, as they have done in the past, leaving the Coast with the environmental and social costs? Does this really matter, anyway?

The resolution of these development issues has been difficult to achieve because of the immediacy of past and present economic problems. There always seems to be a

pressing reason to continue past practices, even though they may be environmentally detrimental in the long run. Hence, the future use of West Coast indigenous forests has been a political issue. Although the rest of New Zealand might sometimes wish that it could ignore these problems, vying interests demonstrate that it cannot.

## 1.7 Main Actors and Agencies Involved.

At the inception of the research two government departments had jurisdiction over approximately 93.5% of the indigenous forest on the West Coast. (Their role was to manage natural resources, including indigenous forests, land and water bodies under different statutes. As this thesis mainly relates to the management of these forests, the State's role is central). The two departments were the Department of Lands and Survey (DL&S) and the New Zealand Forest Service (NZFS). The former was responsible for national parks and reserves, Crown leasehold land and Unoccupied Crown Land, i.e. Crown land not allocated to any particular use, comprising mainly steep mountainous country. The Forest Service had responsibility for land designated State Forest and State Forest Park. The former contained forest designated for timber production, the so called 'production forests', which were (and remain) located in lowland areas with an upper altitudinal limit of 600 metres above sea level. Forests at higher elevations not earmarked for timber production, but which had a primary water and soil conservation function were known as State Protection Forests. Those which had been set aside primarily for recreational use were termed State Forest Parks, although timber production was not necessarily precluded, even though this might only be in the dim and distant future (see Chapter 4).

These forests were managed, then, for recreation, tourism and aesthetic values, for the preservation of indigenous flora and fauna, for water and soil conservation and for timber production. They were not regarded as resources to be managed for optimum use, as their legal designations specified primary goals to be pursued, according to the provisions of particular statutes, such as the Forests Act 1949, National Parks Act 1980 and the Reserves Act 1977.

For instance, section 4 (1) of the National Parks Act, 1980, reads:

> *It is hereby declared that the provisions of this Act shall have effect for the purpose of preserving in perpetuity as national parks, for their intrinsic worth and for the benefit, use, and enjoyment of the public, areas of New Zealand that contain scenery of such quality, ecological systems, or natural systems so beautiful, unique, or scientifically important that their preservation is in the national interest.*

These provisions did not preclude certain other uses, but these had to accord with the principal classification or primary use, as in section 4 (2) (b) of the National Parks Act:

*Except where the Authority otherwise determines, the native plants and animals of the parks shall as far as possible be preserved and the introduced animals shall as far as possible be exterminated.*

Officially, many of the alternative forest-based commercial resources, such as deer, goats and possums were and continue to be regarded as vermin in national parks. Extermination is official policy, but as this has proved impossible to implement successfully, control of animal numbers has become a more realistic objective. Therefore, in national parks and reserves, these animals are not regarded as potential sources of income to be encouraged and enhanced. Even wind-blown indigenous trees in reserves and national parks are not available for salvage by woodturners. This situation represents a severe constraint on certain commercial activities. Nevertheless, it is a valid recognition of non-monetary aspects of forests and other flora, as environments preserved for their intrinsic, spiritual, social and cultural values.

The demise of the DL&S and the NZFS was the culmination of a number of years of debate. In 1982 Cabinet actually decided, in principal, to amalgamate the two (Holloway, 1982). Although this proposal by the National Government was subsequently abandoned, the Labour Party took up the issue as part of its election manifesto. The newly elected Labour Government set up an inter-departmental committee to re-examine the issue, as the NZFS' management of indigenous forests continued to be criticised by environmental groups. Management problems were seen to arise out of the seemingly conflicting objectives that the Forest Service had to follow. On the one hand it had to manage for commercial gain, whilst on the other it had to provide for non-monetary values and to conserve the indigenous forest estate. In addition, the Forest Service was expected to have a social function in mopping-up the unemployed via special work schemes. It could accommodate these various tasks under a multiple-use umbrella. However, in a strict sense, multiple-use management was largely a failure. Environmental groups denounced the concept as a sham, for timber production always seemed to get priority (see Chapter 4).

From the 1 April 1987, three new departments and two new State Owned Enterprises (SOE's) replaced the DL&S and NZFS. The Department of Conservation (DOC) controls an estimated 89.9% of the indigenous forest resource, most of which comes under the jurisdiction of the Conservation Act 1987 which was introduced to coincide with the establishment of DOC. The latter piece of legislation is in fact a misnomer, as the thrust is preservationist rather than conservationist, viz:

*'Conservation' means the preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for*

*their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations.* (Section 2 (1), Conservation Act, 1987).[12]

Thus, the Conservation Department's mission is to protect the environment and to prevent the conversion of land under its jurisdiction to other uses. It has taken over the administration of national parks and reserves, which are still subject to the provisions of the National Parks Act, 1980. Other indigenous forests come under the jurisdiction of the Conservation Act, 1986, unless they are allocated to timber production. In protected forests outside national parks and reserves, extermination of wild animals is not a goal, but their existence and exploitation is subject to the protective thrust of the Conservation Act.

Thus, DOC generally follows a non-consumptive ethic, although there are exceptions, as in the case of wild animal control and sphagnum moss harvesting, provided these are not in conflict with its preservationist role.

Other government agencies not already mentioned include the Ministry of Forestry (MOF) and the Ministry for the Environment (MFE). The former assumed responsibility for most of the residual functions of the NZFS that were not allocated to DOC or the Forestry Corporation. Its role is to provide advice to the Government on matters affecting the forestry sector and to provide a range of services to the forestry sector and other interested parties. Its main involvement in indigenous forestry is in making recommendations on commercial policy and to provide information on the forestry sector, though unofficially, it advises on non-commercial aspects of forestry too. Hence, MOF cannot easily be categorised as having a 'consumptive' or 'non-consumptive' stance to resource use, but rather in promoting conservation (wise use and management).

The mission of the MFE is to ensure that, in the management of New Zealand's natural and physical resources, full and balanced account is taken of all values, including those embodied in the Treaty of Waitangi. It has been promoted by the Government as 'the

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12 In the Conservation Bill 'conservation' was defined as:
*(a) In relation to natural and historic resources generally, means the management of those resources so as*
*(i) to sustain their potential to meet likely needs and desires of future generations; and*
*(ii) subject to the sustaining of that potential, to meet the needs and desires of present generations; and*
*(b) In relation to any particular natural and historic resource, means the management of the resource in the manner that is the most appropriate contribution to the conservation of natural and historic resources generally.*

Whilst this is a somewhat convoluted definition, the Native Forest Action Council mounted a campaign to change the definition as it asserted that it made "DOC a department of Sustained Yield Production" (NFAC, 1987). NFAC's alternative definition was finally written into law, almost word for word. (see Chapter 4 for further details).

Ministry in the middle', as it offers policy advice to the government, as noted above in the workings of committees under its secretary, Dr Roger Blakeley. In this respect, it has had considerable influence as a facilitator of change, but it cannot be said to be a value free organisation.

Territorial authorities (town and county councils) and the two regional authorities, the West Coast United Council (WCUC) and the Westland Catchment and Regional Water Board (WCRWB) also have an interest in indigenous forests. The latter has management responsibilities, under the Water and Soil Conservation Act 1967 and the Soil Conservation and Rivers Control Act 1941, whilst the former local authorities have responsibilities for land-use planning under the Town and Country Planning Act, 1977. They produce regional and district planning schemes. The WCUC has had the most influence, as its Principal Officer was on the first Blakeley working party and a Regional Councillor was on the second (for resources south of the Cook river). However, this influence has been advisory only. Furthermore, not much notice has been taken by central government of the WCUC's proposed Regional Planning Scheme, Section V, which advocated further logging and an extension of clear-felling. In this planning scheme the Council can be seen to hold a 'consumptive' resource ethic, though it advocates wise use and management of resources rather than preservation. The WCUC does not have direct ownership of natural resources and although the regional planning scheme is meant to bind the Crown, it has been held, in law, that this is only to the extent necessary to achieve the regional objectives and policies contained in a scheme. A regional planning scheme cannot positively direct the Crown or a local authority to provide or to continue to provide a particular activity or function or to take a particular action (West Coast United Council v. Prebble, *et al*, 1988).

In theory, the territorial authorities have considerable powers under the Town and Country Planning Act, as they can zone land and specify a range of permitted, and, by omission, non-permitted, uses. Although they cannot make private development take place, they can inhibit and direct it. However, these councils have, in the main, been advocates of industrial development. In the absence of practicable alternatives to provide income and jobs, they have not prevented the unsustained logging of indigenous forests.[13]

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13 District Planning Schemes, prepared by territorial authorities, had no legal power over the Crowns' forestry operations. The functions and jurisdictions of local authorities, who prepare these schemes, have recently been reviewed by the Local Government Commission and new local government structure will come into existence on 1 November, 1989. The Town and Country Planning Act and other natural resource statutes are being reviewed at present.

The West Coast Regional Development Council (WCRDC) is a body appointed by the Minister of Regional Development to advise the Government on the economic and social development of the region and to recommend projects meriting regional development funding. It is serviced by the Ministry of Commerce (formerly the Department of Trade and Industry). The WCRDC has no control over forest management, but one of its members was on the second Blakeley working party, mentioned earlier. It has lobbied for commercial development and recommended financial assistance for part of the research reported on here. Like the local authorities noted above, it favours further development of forest resources and would like to see the logging option left open.

The private sector has had an active role in forest management, controlling the sawmills and bringing considerable influence to bear on successive governments to allocate indigenous forests for timber extraction. Fletcher Holdings Ltd. seem to have been particularly successful in this respect.[14] However, the forestry industry's relative influence over the use of indigenous forests has waned this decade, as environmental pressure groups' influence has increased. Fletchers has only a residual interest in the Coast through its subsidiary, Odlins, at Stillwater, but it was in the process of selling-up at the beginning of 1989. It has also sold its Gladstone and Ruatapu mills and closed the Mananui, Okuru and Ross mills in 1967, 1968 and 1979 respectively (NZFS, 1980). Apart from having diverse forestry interests in the rest of New Zealand and overseas, Fletcher Forests is part of the conglomerate Fletcher Challenge Corporation, so its West Coast interests have become less and less important.

Henderson and Pollard became one of the biggest sawmilling groups on the Coast, owning the Ruatapu and Harihari mills. Carter Holt Harvey now controls Henderson and Pollard. They also took over New Zealand Veneers which owns a mill at Gladstone, just south of Greymouth. Despite having a relatively large sawmilling interest in the West Coast, these operations are a very small part of Carter Holt's total business empire. It is a very large conglomerate with interests in pulp and paper making in the North Island and medium density fibreboard plants in Canterbury and in Chile, apart from other business interests overseas.

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14 Fletcher Holdings was a timber and building company which has developed into a diversified, multinational corporation: the Fletcher Challenge Corporation. Fletcher Forests is now its forestry subsidiary. Fletchers paid for Arthur D Little, the U.S. consulting firm to prepare a special report on the potential development options on the West Coast. This confirmed the West Coast Committee of Inquiry's preliminary findings (1960a) and justified it making a recommendation for the long term allocation of forests to sawmillers (West Coast Committee of Inquiry, 1960b). This was agreed to by the government (see Chapter 4, below).

The remaining significant sawmills on the West Coast are owned by non West Coast companies, apart from the plywood mill at Gladstone (IPL) which is owned by the South Australian Government. These owners are Canterbury or Nelson based. Several have processing plants and retail outlets in Christchurch (e.g. Papanui Timber Co., Paynters and Keighley's). For them, continued access to indigenous supplies has been important, though less critical than formerly, as the recession of the last few years has produced a glut of timber. Several mills have been working reduced shifts (e.g. the Harihari mill was working a four day week in 1987-88) and the Reefton and Pukekura mills have recently closed down.

These individual forestry companies were not represented on the two Blakeley working parties (though a steering committee contained a representative of the NZ Timber Industry Federation). This is in contrast to the active involvement of Fletchers in the proceedings of the West Coast Committee of Inquiry, 1960. However, the West Coast Timber Association represented their interest as they are members of this association. The latter has been actively involved with the allocation of native forests and one of its members was on both Blakeley working parties. The first committee managed to reach a compromise over the use of the forests north of the Cook river. Sufficient podocarps have been allocated until alternative plantation species are available. This will allow sawmilling of podocarps to continue to the year 2006 in Buller, 1995 in North Westland and 1993 in South Westland, based on 100% uptake of the total allowable cut (TAC). Should the TAC not be fully taken up, the resource will last longer. However, industry licences expire in 1989, and will have to be extended (Gillions, 1989). The Association did not manage to influence the Government to allocate the forests south of the Cook river for future timber production, nor to allow clear-felling in the two forests presently set aside for sustained yield logging. It remains to be seen whether the Association can muster sufficient pressure to have the present licences extended.

The forestry companies obviously have a 'consumptive' indigenous forest ethic. This is to be expected as the sustained-yield rotation cycle of podocarps is 400 years and, for *Nothofagus* species, 40-60 years. With reduced areas allocated to indigenous wood production, sustained-yield harvesting would drastically reduce the cut and make many West Coast mills unviable. It is also unrealistic to expect private organisations to establish plantations with these species, as business time preferences are short. Furthermore, although these species can be regenerated, there are no commercially successful plantations of them in New Zealand, although existing beech forests in Southland were, until 1988, managed by the New Zealand Forestry Corporation (which took over the commercial forestry aspects of the NZFS) on a sustained-yield basis.

Another significant group with a direct interest in indigenous forests on the West Coast is the West Coast Timber Industry Employees' Industrial Union of Workers (the Timber Workers Union for short). It, too, was represented on the steering committee for the first Blakeley working party. In 1985, membership was approximately 523 (West Coast Timber Industry Employees' Industrial Union of Workers, 1985). Its members sent 319 *pro forma* submissions requesting that the WCUC, in the preparation of its regional planning scheme on forestry, set aside production forests to allow the continuance of the sawmilling industry and to increase the planting of exotic species. However, the regional planning process was not proceeded with, as the Government chose to enter into direct negotiations with the parties involved (the Blakeley Committees).

Some corporate bodies have an interest in non-timber commercial use of indigenous forests; but, unlike forestry and wood processing, the scale of activities is relatively small. It is only in moss processing that companies are involved as producers. However, listed companies, such as Wilson Neill, Mair Astley and Wrightson Dalgety (part of Fletcher Challenge) rather than private individuals, dominate the overseas sale and marketing of most of the alternative forest-based activities under study. Up till now, they too have had a consumptive ethic, doing little to enhance or propagate the natural resource. Otherwise, production is carried out by private individuals. For example, craft woodworking, by its very nature is not a corporate activity and is not in the business of growing its own produce. Its wood demands are particular, but infinitesimal. It is a good example of conservation in practice: one woodturner on the Coast especially favours burrs, an otherwise wasted part of the tree; another uses salvaged pink pine (*Halocarpus biformis*) posts. The value to weight ratio of the resulting products is very high. Similarly guiding and beekeeping are individualistic activities. They are relatively environmentally benign, falling towards the 'non-consumptive' resource end of the spectrum.

The biggest and single most influential indigenous forest lobby this decade has not been the above mentioned. Rather, it has been the Joint Campaign on Native Forests (JCNF), which is a coalition of the Royal Forest and Bird Protection Society (RFBPS), the Native Forests Action Council (NFAC), Federated Mountain Clubs of New Zealand (FMC) and the Environmental and Conservation Organisations NZ Inc. (ECO). This coalition mounted considerable pressure on successive governments to have more and more forests set aside in reserves and national parks. Its membership, which numbers thousands of individuals, have written to Members of Parliament and to the news media, whilst its director, Mr Guy Salmon, has made frequent press statements and been a principal speaker at conferences, such as that held by the New Zealand Institute

of Forestry in Greymouth in 1987. So successful has the Joint Campaign been, that it was represented on both of the Blakeley working parties on the allocation of indigenous forests on the West Coast. Furthermore, it was instrumental in changing the slant of the Conservation Act to make it preservationist ('non-consumptive') in character. (One of the above environmental groups, NFAC, has since amalgamated with the Environmental Defence Society (EDS) to form the Maruia Society, named after the Maruia Declaration - the second largest petition ever presented to parliament, calling for the cessation of indigenous logging).

The JCNF managed to achieve a high political profile and portray the New Zealand Forest Service's management of indigenous forests as inept. This is not the place to argue whether this was a fair indictment or not; suffice it to say that sustained-yield management of indigenous forests had not been a success. The Forest Service was implementing the policies of successive governments, which failed to respond to rising public concern. By the time government took notice, there was little the Forest Service could do right. Poor site supervision, in a few cases, did not enhance the Service's reputation either. Hence public trust and confidence in NZFS was at a very low ebb, contributing to its eventual demise.

The last but by no means insignificant group is the Poutini Ngai Tahu. They and Maori of different origin (including those of mixed descent) numbered 1899 at the 1986 Census, or less than 6% of the total West Coast population. Furthermore, only 0.2% of the West Coast is in Maori ownership. But one cannot take these figures on face value alone, as the Ngai Tahu have asked the Waitangi Tribunal[15] to rule on the original purchase by the Crown in 1860 of the West Coast (from Kahurangi Point in the north to Milford Sound) for £300 (the Arahura Purchase). The Deed set aside certain reserves, but an area of about 80,000 ha that the Maori especially wished to keep, between the Grey (Mawhera), Arnold (Kotukuwhakaoho) and Hokitika (Okitika) rivers was eventually sold under duress (McAloon, 1988), except for part of a promised allocation of the bed of the Arahura river which contains the prized greenstone (pounamu), and an area at the mouth of the Grey river, part of which is now the central business district of Greymouth. It is claimed that the Crown never kept to its side of the bargain, ignoring the reservation of the Arahura bed until 1976 (when only partial redress was made). A number of promised reserves were never given to the Ngai Tahu, who also claim that successive Maori trustees failed to consult with the Maori

15 The Waitangi Tribunal is a judicial body reconstituted by the 1985 Amendment to the Treaty of Waitangi Act to hear grievances arising from the Treaty of Waitangi, 1840. After hearing these grievances, the Tribunal makes recommendations to government which then decides what action to take.

owners over the use of the land, breaching the partnership required by the Treaty of Waitangi.

The present claimants do not press for the revocation of the Arahura Deed of Purchase, nor for full compensation for the alleged wrong-doings of the Crown. Instead they seek allocations of Crown land, and substitute land for that which has passed into private ownership. If that proves impossible, they reserve the right to claim financial compensation (Tau and Ngai Tahu Trust Board, 1987). The Crown and its agents are also alleged to have deprived the Maori of a major economic and sustaining resource in their mahinga kai, including birding, cultivation, gathering and fishing resources (the Muriwhenua Claim). (Negotiations to resolve this action with respect to the ocean fishery resources of New Zealand is at present stalled by a court injunction against proposals embodied in a bill before parliament). Furthermore, by taking out an injunction against the Crown, the New Zealand Maori Council has prevented the transfer of land to the newly created S.O.E.'s until land claims are settled.

Although the Poutini Ngai Tahu are relatively few in number and now only control a fraction of the West Coast, the ramifications of their claims are enormous. These go beyond mere financial recompense, as the final outcome of the allocation of forests south of the Cook river could be influenced by the Waitangi Tribunal's decision. Furthermore, legislation has or is being enacted to take account of the provisions of the Treaty, as for instance, in section 4 of the Conservation Act 1987, which states:

> *This Act shall be interpreted and administered as to give effect to the principles of the Treaty of Waitangi..*

In other words, the management and administration of forests on the West Coast must be a partnership between the Maori and Pakeha, and full consultation and respect of rights under the Treaty are obligatory. Furthermore, other forested land will also likely be affected by a similar clause in new legislation now being formulated, as the obligations of the Treaty have already been raised in submissions received in response to proposals to reform resource management statutes (Ministry for the Environment, 1988b). Should a similar provision be enacted, then all land use decisions requiring statutory consent will be affected.

Like many other poor socio-economic groups world-wide, the Maori seek to use the environment to improve their material well-being, as well as to provide for cultural and spiritual needs. They have a strong conservation ethic, rather than the preservationist, 'non-consumptive' philosophy held by DOC and JCNF. However, this is not necessarily sufficient to ensure that resources will be sustained, as is evident from the

past destruction of indigenous forests (Baines, *et al*, 1988). Hence, this portends potential future clashes with DOC over indigenous forest management and policy.

## 1.8 Working Hypotheses.

Given the structural changes to the West Coast economy, the role of the Crown and other actors and the diminishing importance of timber production, the research started with a number of working hypotheses for examining alternative uses of the forest. It was anticipated that these hypotheses would inevitably be confirmed or refuted in the course of the study, bringing about a re-formulation later. Nevertheless, they are presented here to indicate the scope and direction of the research. The first proposition was that:

i) *There may be alternative sustainable uses of indigenous forests which could provide employment, income and an acceptable quality of life, without massive government support.*[16]

'Production forestry' in lay and professional circles in New Zealand had come to be equated with large-scale timber production and not with a range of products from smaller scale, less economically spectacular operations. This was considered to be an extremely myopic view and one that had arisen chiefly out of the pre-occupation with an impending timber shortage that was apparent before the First World War and which was not alleviated until the output from plantation species was assured in the 1960's. Some alternative commercial uses, such as deer capture and possum trapping had existed for decades, whilst others were in an embryonic state of development and only discussed in broad terms ( such as forest-based tourism). These uses had not been fully assessed or appraised on a regional basis nor understood from the point of view of those involved in them. Hence, it was contended that:

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16 Although a forest may be defined as a plant community predominantly of trees and other woody vegetation, usually with a closed canopy, this is too narrow a definition for the purpose of this research. Forests and forest associations appear to be important. Thus, for tourism, it is rarely one element alone that is important, but a combination of factors. There is no water-tight way to draw a boundary around these associations. It may be easier to do this by a process of elimination, so that indigenous forests exclude all land areas which are built-up, farmed, mined or otherwise converted, where there is no direct, integral association with an indigenous forest system. Wetlands which occur as part of a forest system are considered and hence activities associated with sphagnum moss have been studied.

With respect to uses, alternatives to conventional logging and processing activities have been examined. Alternative uses include those dependent on animal products, (deer, goats, possums and beehive products), vegetative matter and its derivatives, (horticultural products such as household plants, sphagnum moss and craft wood products) and guiding (tourism). These were all of existing or potential economic importance.

ii) *The social and economic needs of West Coast residents, which might be fulfilled by alternative ways of using indigenous forests, had not been adequately explored.*

Local, regional and central government decision-makers, sawmillers and environmental interests have been pre-occupied with the saw-milling industry and associated jobs, (amongst other things). Jobs had been regarded mostly in gross, numerical terms and as a static relationship with forestry and processing. For instance, the West Coast United Council in its Draft Regional Planning Scheme, Section V, Forestry, was principally concerned with maintaining and enhancing employment levels, not with population needs. This was because government funding of regional services was on a per capita basis (WCUC, 1985). Hence, the concept of 'community viability' was developed as one of the main planks of the WCUC's Regional Planning Scheme, Section One. 'Community viability' would be achieved by "population growth through employment growth, with the maintenance and improvement of services and the protection and enhancement of the environment" (Ministry of Works and Development, 1986).

As meaningful choices in employment opportunities had not been presented in the draft scheme section on forestry, it was not surprising, therefore, that the West Coast Sawmillers Association advocated the continuance and extension of logging activities, whilst the West Coast branch of the Royal Forest and Bird Protection Society regarded the draft as a biased and narrow-minded view of what people needed. All forest resources were not looked at (WCUC, 1986).

Even if alternative opportunities had been identified, it was postulated that some would not be acceptable to those with an interest in conventional timber production or even to those opposed to it. Hence, it was hypothesised that:

iii) *There was no 'master solution' or blue-print which would 'solve' all of the social, economic and environmental problems on the West Coast.*

A range of acceptable uses was likely to be revealed, in terms of environmental, social and economic values. For instances, a living might be made from possum hunting by an individual, but if a private company was to undertake this activity it might seek a different rate of return on its investment and might not undertake it at the same rate of return as that achieved by an individual. Objectives would vary, some being apparently irreconcilable, such as those between forest managers wanting to keep animal numbers low and commercial interests who wanted to keep numbers high.

In the past, attempts at indigenous forest management on the West Coast had been thwarted, partly because of the lack of commitment and resolve by the Government and its agent the NZFS. Hence, it was postulated that:

iv) *The realisation and acceptability of alternatives uses would not merely be a technical issue.*

Dickson (1975) and Edquist and Edqvist (1979) contend that the choice and application of technology is not neutral, but is political. A principal contention of this study is that there are indeed some fundamental prerequisites for alternative forestry projects to succeed - one of the most important being the philosophical position of the Government and decision-makers which is necessary to provide a conducive environment. Edquist and Edqvist (1979) introduced the notion of 'social carriers of techniques', when referring to the acceptance and uptake of physical and material elements of technology. Transferring this notion to the choice between different uses, it seemed highly relevant to investigate who had the interest and power to determine these and to understand the constraints impeding their uptake. Although one might agree with Edquist and Edqvist (1979) that obstacles in the form of vested interests and power structures must be overcome, whether they could be overcome on the West Coast was of particular interest.

Much of the information necessary to determine whether alternative uses are viable or not is not testable in statistical terms. Rather, evidence is assembled to support a particular line of argument. Following Saunders (1979) this is not so much a 'test' of theoretical propositions, but an application of them.

## 1.9 Structure of the Thesis.

Having set the context of the study in this first chapter, a theoretical framework follows in Chapter 2. This links the industrial use of forests to development theory, and outlines the basis for present New Zealand economic policy. The conflicts that result from the political ideology that is at present being followed are contrasted with wider views of development, particularly the ecological approach.

Chapter 3 sets out the methods used to gather and interpret data.

In Chapter 4 an attempt is made to understand why multiple-use forest management did not give greater emphasis to non-timber uses. This chapter is not merely background material, as past attitudes and practices have a significant influence on present management and the constraints and opportunities embodied in statutes, which govern what can and cannot be done.

Chapter 5 and Chapter 6 detail the nature and state of alternative forest-based activities and the attitudes and perceptions of those who are involved in them.

In Chapter 7, attempts by forest-based users to overcome the constraints of natural conditions are outlined. The ability to manage resources and the policies of bureaucratic resource management agencies are discussed.

Alternative use potentials are discussed in Chapter 8, against a backdrop of an expected continuation of Government policies and in the light of continued neo-classical economic philosophies held by the Government and the Opposition.

Finally, Chapter 9 sets out a way of partially overcoming the constraints inherent in alternative forest-based users acting individually and the difficulties that bureaucratic decision-makers have in managing forest resources: social forestry. The benefits and limitations of social forestry and unresolved dilemmas are outlined.

# CHAPTER 2. THEORETICAL FRAMEWORK.

## 2.1 Background.

The principal focus of the research thus revolves around the sustainable, multiple-use of indigenous forests. Before this is misconstrued, it is necessary to acknowledge that 'use' has many connotations, often being employed to suit or reinforce a particular ideology.[1] In this research, 'use' does not imply narrow, irreversible consumption, of using something up, or of mere interest in economic growth or financial returns. 'Use' can be active or passive, consumptive or non-consumptive of resources, such as the sustained-yield of material products or the visual appreciation of forests in a national park.

Hence, 'use' can be thought of as being on a spectrum from preservation at one extreme to exploitation in a pejorative sense at the other. At each extreme, the range of uses that can be accommodated will be narrow. As this research seeks to assess whether there are sustainable alternative uses, it follows that a conservation ethic is being followed and that sustainable and multiple-use of resources are important concepts.[2]

The uses that have been examined are commercial alternatives to those which require the large scale conversion of the forest, implicit in industrial utilisation. However, whilst it is relatively easy to identify activities which rely on mass production and processing, it is more difficult to categorise these alternative uses. Nevertheless, it will be shown that it is useful to draw a distinction between industrial and non-industrial uses, as each has different organisational and promotional requirements.

Furthermore, whilst this study focuses on forest-based activities of a commercial nature, these are intimately bound up with non-commercial issues. They cannot be adequately understood without reference to historical events, which circumscribe the present and shape the future. Hence, no commercial activity on the West Coast can be meaningfully assessed without reference to environmental matters, for instance, and to the socio-political reasons why these are now so dominant.

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1 For instance, the Native Forest Action Council (1987) attacked the phrase 'sustained-use' in the Conservation Bill on the grounds that 'it builds sustainable production into the central goal of DOC'.

2 Conservation in this context means wise use and management of resources and encompasses the preservation, or non-consumptive use of resources. Unfortunately, conservation and preservation are often used synonymously by many commentators and organisations that should know better. The World (and subsequent New Zealand) Conservation Strategy (IUCN, 1980; Nature Conservation Council, 1981) added more confusion than clarification. Both strategies refer to 'integrating conservation and development', meaning recognising and fostering the interdependence between the natural world and human economic and social development, as subsequently argued by the World Commission on Environment and Development (1987).

The study also has a dynamic nature, even though it is a snap-shot of present conditions. As these conditions are in constant flux and change, processes rather than end states are important. Hence, although some of the data quickly becomes dated (such as unemployment rates, and respondent's opinions), it is the factors underlying these data, rather than the data themselves that are important. Furthermore, although change is continuous, the specific time period under study is an important variable, conditioning outcomes and any action that might be taken by decision makers.

The study is not a pure sociological, ecological or economic analysis of alternative forest-based uses. Instead it is a synthesis of a variety of theories which have promoted and hindered alternative forest-based uses and which shape their future. The study examines West Coast and New Zealand conditions and compares them to development processes elsewhere. However, an exhaustive examination of "grand theories" of development is not presented, as the focus is more on the processes that have or have not moulded decision makers assumptions and actions, rather than in trying to draw specific conclusions from general principles. Furthermore, as there is no single theory encompassing the scope of the problem which this study addresses, we are forced to be eclectic in the use of theory and to err on the side of an inductive, rather than a logico-deductive approach.

Because the dominant neo-classical development paradigm has been pre-occupied with capital intensive, industrial production, it has led decision makers to systematically exclude consideration of other theories which might have been more sympathetic to relatively benign forms of forest-based activities. By focusing on the West Coast and persons engaged in alternative forest-based uses, existing and potential implementers of an alternative development model can be identified. Thus, a deliberate study was made of people directly involved in these alternatives, examining similar development issues suggested by Shirley (1982). By studying this development process, an understanding and explanation of events and the implications for the future is presented.

As explanations depend, amongst other things, on the assumptions we make about how systems function and events are ordered, it is necessary to make these explicit. We start with a philosophical discussion of multiple-use management as this leads us into the issue of allocating scarce resources and making choices between various activities. This is a political process and hence the discussion turns to how intentions to manage in a certain way are thwarted by events, individuals and interest groups. Decision-making "theory" offers an approach to examine this process, but does not provide an explanation of the complex interrelationship between the physical environment, forest-based users, the economy and society. Conventional development theory also falls

short in providing an explanation of this relationship. A more holistic approach is necessary, which recognises the importance of the natural world. Whilst adopting this broad perspective, it is, however, necessary to be more specific about the management of resources and the ramifications for the West Coast, to which we now turn our attention.

## 2.2 Orientation.

The rationale for multiple-use forest management evolved in Europe following a long period of forest clearance, leading to scarcity. The concept was later to become one of the main pillars of indigenous forest policy in New Zealand, as is explained in more detail in Chapter 4.

At the outset, it is crucial to draw a distinction between the variety of uses and functions that forests provide or can be put to and active management for these uses A mere recognition of the different uses does not constitute multiple-use management, as the latter is a deliberate, explicit attempt to realise an optimum range of forest values, with a net social benefit greater than that provided by any one single use. This requires an assessment of productive inputs, such as capital and labour, the appreciation of natural outputs from a forest and the determination of the increment in value derived from maximising individual uses or outputs. As all uses cannot be maximised simultaneously on each and every tract of forest, a choice of which uses to enhance and which to suppress is inevitable. The maximisation of timber values, even in ignorance of alternative, "minor" or "special" forest values or the impacts of specific uses, also constitutes a choice, by default. Thus, trade-offs are made either explicitly or implicitly, and although many values are difficult to quantify or compare, a failure to do so or to attempt to do so acknowledging the limitations, merely ducks the critical issue of measurement or weighting of values (Clawson, 1978).

There were more than a few problems in interpreting and implementing the multiple-use concept in New Zealand. These are spelt out in detail in Chapter 4, but briefly they were:

i) the complexity of indigenous podocarp forests compared with European species, in terms of the management techniques required (of which there was little knowledge), the long rotations necessary (more than three times the period that European foresters had been accustomed to) and the low mean annual increment compared with introduced plantation species such as *Pinus radiata.*

ii) the desire to keep indigenous timber supply options open until faster growing plantation species matured, and

iii) because of the better performance of the latter species (principally radiata pine), management effort was concentrated on them rather than on indigenous species. Sustained-yield management was experimented with in West Coast podocarp forests, starting with strip felling, then selection logging. However, this often led to the blow-down of stands of forest, compaction of soils, impeded drainage and irreparable damage to trees that were to be left. This was significant as multiple-use and sustained-yield management were interlinked; without the latter the former was not a long term possibility.

iv) the influence of sawmillers to extend rather than reduce the area of forest available for harvesting,

v) the linking of indigenous timber production to wider socio-economic objective, other than the satisfaction of local timber needs, by successive governments.

Under these circumstances, clear-felling prevailed. In many other instances multiple-use forestry could not be accommodated at all as deforestation took place to clear the land for farming, though this was more the practice on private land than in areas designated State forest. Once the land was put to the torch and subsequently grazed, regeneration was ruled out, at least for as long as farming continued.

Podocarps and beech (*Nothofagus* species) did regenerate in areas where burning and grazing were absent and perhaps time has been one of the major impediments to the realisation of multiple-use management in these cases. This would be particularly so for podocarps, with rotations of up to 300 years, but of lesser importance for *Nothofagus* species as saw-logs can be obtained in 40-60 years from regenerated trees. Nevertheless, the latter period is still long compared with the 25-30 year rotation for radiata pine, especially in (former) times when timber was scarce. However, to achieve 40-60 year rotations the over-mature old crop has first to be clear-felled to allow light to penetrate to the forest floor to stimulate new growth. This operation alone would preclude the realisation of a wide range of values until such time as a new forest was established. But one of the most significant impediments to following this silvicultural practice has been the low yields of high quality wood, as the the old crop suffers from a high level of rot. This makes the operation marginally economic. Furthermore, beech was, and continues to be, a lesser preferred timber species as it is difficult to dry, is variable in colour and therefore difficult to match and suffers from pin-hole borer attack (Tilling and Clifton, 1984).

These problems should not be interpreted to mean that multiple-use management should always provide for timber extraction. Rather, it will be argued that they illustrate why

indigenous lowland forestry, as practiced by the State, was accorded low priority, and hence why, by default, professional bias, (because of the poor timber yields) and political imperatives, multiple-use management was not pursued more vigorously. It was not until the 1950's that the NZFS actively managed for uses other than timber. Not-with-standing, it was not until the 1980's that alternative commercial production from indigenous forests was encouraged by the NZFS. This excludes the passive promotion of National Parks for tourism and recreation by the Department of Lands and Survey and the Tourism and Publicity Department. During this post-War period more and more value was being ascribed to the declining indigenous lowland resource, giving rise, from the late 1960's onwards, to various environmental pressure groups and political activism to halt indigenous logging.

In summary, after the initial choice by government to concentrate on plantation species but still rely on indigenous timber until the plantations matured, decisions had to be taken to allocate and manage the diminishing indigenous resource. But despite the adoption of techniques based on the multiple-use and sustained-yield concepts, intentions and outcome were rather different. From a theoretical perspective this is hardly surprising as the allocation of scarce public goods involves questions of equity for which there are no technical solutions. The process is inherently political (Webber, 1969).

To be successful, sustained-yield forestry must keep the rate of human demands below the rate of biological regeneration or forest increment. This need not be necessary or appropriate for every tract of forest, but it is axiomatic that political choices are necessary if demand threatens or exceeds environmental limits: either the policy is abandoned or the environmental constraint is recognised as the bottom line beyond which unrestrained demand will eventually lead to the destruction of the forest.

This brief overview of the problems associated with the implementation of the multiple-use and sustained-yield concepts on the West Coast, suggests that the outcome was not the result of a single rational decision but of a complex set of events and circumstances, some of which were unintended and unanticipated. Irrespective of the theoretical perspective, or unit of analysis, the use of forests rests on a complex system of individual and bureaucratic decision-making, tempered by social, economic and physical conditions. The planning and management of the State's indigenous and plantation forest estate, the allocation of resources to them and the distribution of benefits are an excellent example of this. Statements by successive directors of the Forest Service in their annual reports to Parliament about attempts to achieve sustainable indigenous timber production and multiple-use management gave an over-optimistic impression.

The reality was somewhat different. Such differences between intentions and outcomes can be partly explained by decision-making "theory". This deals with choices between a number of competing alternatives and involves the power and influence of some actors over others in getting certain decisions implemented and others decisions overridden.

## 2.3 Decision-making in relation to Indigenous Forestry.

All too often it is assumed that national governments act as if they were centrally coordinated, purposive individuals. Analysts place themselves in the shoes of these individual decision-makers and ask what they would have done in the circumstances of a certain situation, given specified objectives. In most cases, these analysts try to make rational explanations of government behaviour (Allison, 1971). However, one cannot regard public policy outcomes as the result of anonymous abstractions of the State or merely as the result of a set of de-humanised circumstances, such as geographical conditions or historical or political situations (Rosenau,1967). Decision-making analysis can reveal the less obvious factors that determine outcomes. Instead of outcomes being the result of rational strategies, they are more likely to be unintentional, unpredictable and unstable. Bachrach and Baratz (1970) say that policy choices often develop a momentum of their own, once certain preliminary steps have been taken. Incremental changes, which seem logical, lead sometimes to unforeseen and unintended 'decision-less decisions'.

In most cases the emphasis is on action as decision-making. However, this concept has been extended by Bachrach and Baratz (1970) to take account of Schattschneider's (1960) concept that:

> *all forms of political organisation have a bias in favour of the exploitation of some kind of conflicts and the suppression of others because organisation is the mobilisation of bias.*

Bachrach and Baratz (1970) say that:

> *Political systems and subsystems develop a 'mobilisation of bias', a set of predominant values, beliefs, rituals and institutional procedures ('rules of the game') that operate systematically and consistently to the benefit of certain persons and groups at the expense of others.*

They contend that this bias is primarily maintained by 'non-decision making': "a suppression or thwarting of a latent or manifest challenge to the values or interests of the decision-maker", preventing political issues from reaching the political arena. However, there is some difficulty in Bachrach and Baratz's separation of those who exercise power to create, shape or reinforce the mobilisation of bias and the mobilisation of bias itself, as it can be inferred that the latter is powerful in itself. But

without any interaction between actors, it is difficult to say that the mobilisation of bias is a form of action (Debnam, 1984).

For Bachrach and Baratz it is crucial to identify potential issues which are prevented from becoming actual issues. The challenges to the values and interests of the decision-maker can be identified by actual decisions that have been taken. Lukes (1974) is critical of this emphasis on actual, observable conflict, be it overt or covert, as it excludes the concepts of manipulation and authority, whereby agreement or compliance with a decision is based on reason. He also points out that "the most effective and insidious use of power is to prevent such conflict from arising in the first place". Hence, there may be a "latent conflict, which consists in a contradiction between the interests of those exercising power and the real interests of those they exclude" (Lukes, 1974). Furthermore, one must also look beyond individuals' decisions to collective decisions exercised, for instance, by groups or institutions.

The analysis can thus be conducted on a number of levels and focus on different elements.[3] Access to and the availability of information is critical. A satisficing strategy has to be followed (Simon, 1983) as it is impossible to glean all the information necessary to prove a point conclusively. What is more, written accounts and verbal reports, however complete, need not necessarily reveal the real situation. Informants rationalise their positions, hide information or simply forget what actually took place. Others bend the facts or, because their position, have to defend a certain line. The then Director-General of the NZFS, Kirkland (1984) exhibits this tendency. In 1984 he argued for the integration of 'conservation' and 'development', as 'balanced use' was the *raison d'etre* of the Forest Service. Plantation forestry had taken the pressure off the indigenous resource and made possible the debate on options for the lowland resource. Separating commercial from non-commercial functions would have put forestry back to the "narrow mandate that it had been given 60 years earlier". Four years later he was managing director of the NZ Forestry Corporation (the SOE responsible for State commercial plantations) blaming the demise of the NZFS and multiple-use management on "the general problem of measuring the efficiency with which multiple-use public agencies allocate resources" (Kirkland, 1988). However, this view was a mere reflection of Treasury's and the Government's, as 'efficiency' had become a buzz word of Rogernomics. Did Kirkland really believe this, or was it

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3 It may emphasise the process of how decisions are made, or the outcomes or the relationship between process and outcomes. 'Rational-comprehensive' (such as systems analysis and operations research) and pluralist approaches dealing with piecemeal change (epitomised for instance by 'the science of muddling through') are examples of approaches which deal with the decision-making process. Analysis concerned with outcomes might seek to examine the durability, equitability or the effect on certain groups.

convenient for him to say so? For he goes on to say that despite the allocation of indigenous forests for non-timber use to the DOC, the latter's:

> *non-neutral advocacy role will accentuate the pressures to decide an appropriate balance by political process, and increased lobbying by the interest groups concerned is inevitable* (Kirkland, 1988).

Lukes (1974) discusses more difficult cases, such as "justifying the counterfactuals" i.e. determining what would have been the situation had power not been exercised. For this, one can only infer what the situation would be. Another difficulty is where an exercise of power may involve inaction rather than observable action, or where it is unconscious. With inaction one is dealing with the suppression of proposals or ideas, though there may well be specifiable consequences. Thus, in the case of the West Coast lowland indigenous forests the consequences of not actively pursuing multiple-use principles was the destruction of these forests.

These difficult issues do not detract from the decision-making approach, but raise ones awareness of possible outcomes and the reasons why others do not become apparent or are thwarted. The approach provides a means of delving under the surface of apparent explanations, opening the way for more robust analyses. Thus, Kirkland's assertion that the demise of the NZFS and multiple-use can be attributed to the failure to measure the efficiency of allocative decisions, can be challenged (see Chapter 4).

Although the study of alternative forest-based uses is not concerned with power relationships *per se*, the core elements of any analysis of power, as proposed by Debnam (1984), are of interest. These elements are actor, action, intention and outcome and how these are influenced by the structure in which decisions are made and the structure used by the analyst to elucidate the power relationships. (The latter requires a theory or propositions to test a counterfactual proposition, i.e. an outcome that would otherwise have not occurred had power not been exercised). Rather than being a study of the process of who and how decisions on indigenous forest use were actually made, the focus is on the difference between intentions to manage indigenous forests in a particular way and actual outcomes; in particular how these outcomes present constraints and possibilities for present and future forest users. Thus, at a general, macro level, decision-making concepts provide a useful framework for determining why the indigenous deforestation process was perpetuated, despite objections about the unsustainability of clearfelling and the loss of other values, why multiple use management of indigenous forests on the West Coast took so long in evolving, what the consequences are for present forest users and what the prognosis is for future resource use and management.

The importance of moving from individual actor to collectivities, as proposed by Lukes (1974) will become apparent. In the early days, the forest processing industry held the trump cards over forest utilisation, but later their influence waned as environmental groups triumphed. Local authorities were of lesser importance, whilst amongst the least influential were the actual commercial alternative forest-based users themselves. Compare these pressure groups with those individuals going about their individualistic business of making a living from alternative forest resources. Most of them did not have a big enough or organised constituency even to get their concerns on the agenda. They were locked in to a certain forestry approach which polarised the factions and prevented a serious consideration of a range of alternatives.

Professional foresters on the West Coast were aware of the loss of forest that was taking place and expressed their concern (Chavasse, 1986). But Public Service foresters were prevented by civil service rules from making public statements or taking part in public debate (unless officially cleared to do so). Even if the Westland Conservancy of the NZFS had made a stand, it did not have the autonomy to act alone and had to defer to the centre, Wellington, where policies and priorities were established by the government of the day. The national emphasis was on plantation forestry and industrial use, which seemed far more exciting than trying to wrestle with the problems of indigenous forest management, for which there were no easy solutions. Thus the organisational system in which decisions were made, its *modus operandi* and the mechanisms it adopted to defend its position provide some useful insights into how alternative multiple-uses could have been relegated to the fringe. An understanding of these phenomena will also prove useful when considering future changes to promote or curtail alternative forest-based uses.

As decision-making analysis also focuses on individual participants in the formation and implementation of policy, it is revealing to examine whether individual perceptions of what forestry itself meant had any bearing on the way foresters behaved. From this perspective, it is hypothesised that New Zealand foresters were significantly influenced by the received wisdom of what forestry was all about. This would have been gained from practical experience and formal education. Rangers and woodsmen were trained by the NZFS as technicians, with a heavy emphasis on practical forest experience. Professionals were university educated in New Zealand from 1926-1930 at the University of Auckland and from 1925-34, and again from 1967 at the University of Canterbury.[4] During the years when there was no forestry school in New Zealand, foresters were educated in Britain, Canada, the USA and especially Australia. Overseas

4 However, according to Poole (1969) barely 20 foresters were educated at Auckland and Canterbury between 1925-34.

post-graduate study was also encouraged before and after the School of Forestry was re-established at Canterbury.

Commenting on American forestry education, Burch (1988) asserts that it emphasised and continues to emphasise technical and biophysical solutions to problems. This was true of New Zealand's forestry education too; a situation that still persists. For instance, a supplementary brochure to the Prospectus of the School of Forestry, University of Canterbury (c.1980) states that 'forestry is a technology, which means that it is an applied science'. For many years up until 1985, the course was thought of as a pyramid culminating in forest management, viz:

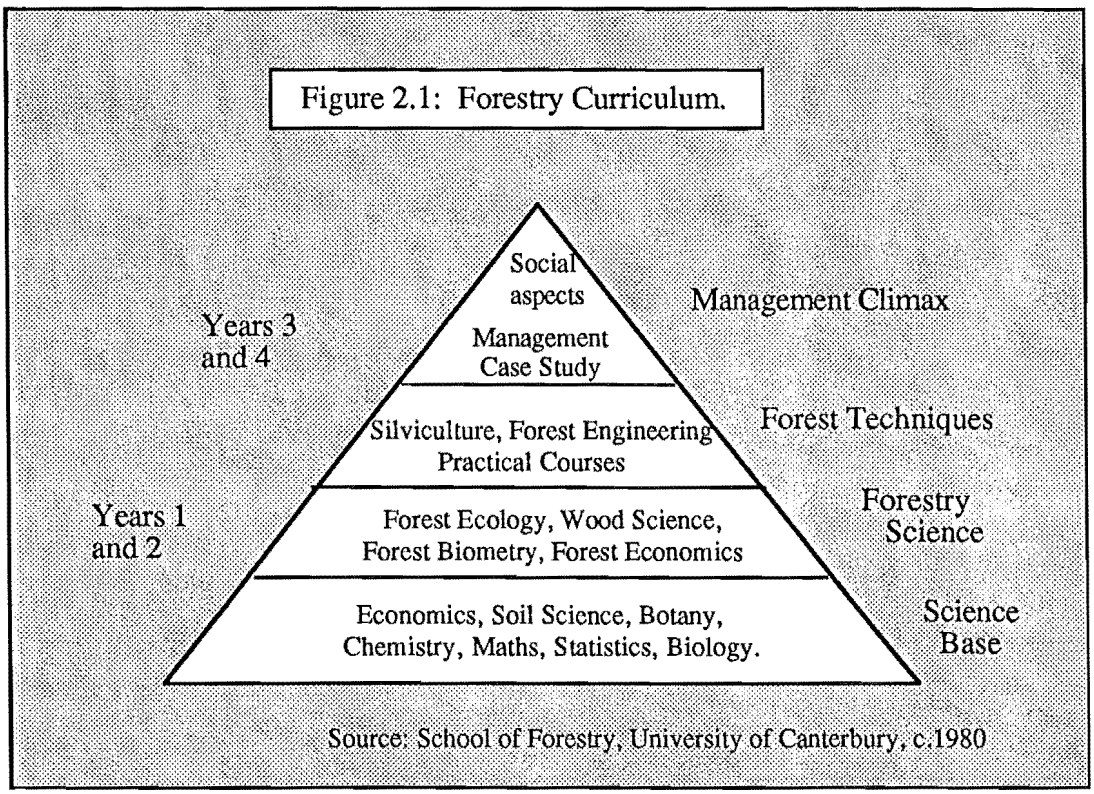

Figure 2.1: Forestry Curriculum.

This course structure, discussed by McKelvey (1984), was modified in 1985 and progressively more options have been added since.[5] Nevertheless, the degree is heavily

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5 Two professional years in the School plus two intermediate years outside (usually in the Science Faculty) were replaced in 1985 with three professional years and one intermediate year. Some reorganisation of courses took place, with a course on Forestry and Society being brought forward to the third year. This course included lectures on history, law, socio-economics (e.g. project appraisal) and ethics. An extra year of Forest Ecology was also taught. Multiple-use Forestry was offered as a final year option. This covered residual subjects not covered in other courses, such as management for recreation and amenity, environmental economics and public consultation. In 1986 Forest Administration, Markets and International Trade, Transportation Systems in Forestry, and Wood Conversion Technology were added as options. Substantial industry funding has supported the increased range of subjects offered and provided for the salaries of two temporary academic staff members (in

oriented to biophysical subjects: wood science, wood technology, wood utilisation and forest engineering. This reflects industry demands, expressed at the 1981 New Zealand Forestry Conference, in the light of a forecasted doubling of plantation output in the 1990's and a trebling after the turn of the century. In Britain too, a narrow view of forestry was evident. Johnston (1975), a director of the British Forestry Commission, held the view that the "principal function of forestry was to produce wood", though he acknowledged that there were many circumstances which complicated this and that other values might dominate forest management.

This would have been linked to another factor that influenced decisions on the type and scale of forest uses promoted by the Forest Service. This was the development ethic held by decision-makers in government. Whilst it is impossible to know what the philosophical stance of key actors was over the entire period of the Forest Service's existence, the orientation of policies suggests underlying theories of development. The adequacy of these in dealing with the interface between the environment, economy and society should now be examined.

## 2.4 Inadequacies of Development Theories.

Development theories fall on a continuum between two extreme models, based respectively on neo-classical and neo-marxist theories. They underpin the liberal and socialist ideological positions of decision-makers, providing them with theoretical justifications for normally very political positions (Clements, 1980). Both take economic growth and mass consumption as a starting point of development, and both are rooted in materialism, but differ fundamentally over the distribution of the benefits.

A neo-classical explanation of New Zealand forestry would require minimal levels of State management of the forest resource, in the belief that the market system, based on prices and private profit and an equilibrium in supply and demand would most efficiently allocate forests to different uses. Clearly this was not the case from at least the inception of the Forest Service in 1920, and certainly not in the 1930's during the first planting 'boom' which occurred during the Depression and which had the social goal of creating employment. Plantation forestry continued after the Second World War when a small State resource was established on the West Coast in the 1960's. All-in-all, State promoted forestry was supported in New Zealand right up until the early 1980's by both the Labour and National parties. By the time of the demise of the

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addition to the other nine full-time academics). A unified course on Social Forestry, as envisaged by Burch (1988) does not exist, although it has been informally suggested that Forestry and Society and Multiple-use Forestry should be unified, revamped and taught as a compulsory foundation course (Tilling, 1987). The entire curriculum is at present under review, but it is unlikely that this will reflect the view held by Burch (1981) that forestry is a branch of the social sciences.

NZFS on 31 March 1987 there was 598,000 ha of net productive State plantation, 52% of the total exotic forest estate. Indigenous forestry became relatively less of a priority. But after the 1981 Forestry Conference (initiated by the New Zealand Forestry Council) government commitment to forestry began to wane, reaching the present nadir and 'hands-off' approach by the Labour Government. The latter's roots were working class and in favour of nationalisation of significant economic assets, until the constitution of the Labour Party was changed in 1951 (Webber, 1978). Now there are plans to privatise State plantations. Furthermore, as neo-classical, laissez-faire economic philosophies have now assumed a new significance, they must be taken into account in assessing the future prospects for alternative forest-based uses.

Whilst market processes were circumvented by State intervention and support for forestry up to the late 1970's, socialist policies were far from the norm. Poole[6] (1988) reminds us of the copious plantation output which was the result of the exotic planting 'boom' of the early 1930's. By the 1950's Kaingaroa was "packing on wood" and a use had to be found for the great volume of wood that was "coming out of our ears". Industrial utilisation was the solution, but "the wood was given at concession rates for an excessive period" (Poole, 1988). The Murupara scheme was launched, described by Poole as a "glamour enterprise". No wonder indigenous forestry paled in comparison and that many State foresters and decision-makers were persuaded that (exotic) wood production and utilisation was what New Zealand forestry was all about. Apart from these concessions to promote the utilisation of plantation species, indigenous forests were also disposed of at low stumpage rates, prompting Poole (1988) to comment:

> *"The native forest was simply manipulated so* (that) *the economics were rigged according to Government policies, the need for industries to show profits and the need to clear land for farming".*

In 1979/80 alone, Tasman Pulp and Paper Co (now part of Fletcher Challenge) received more than $40 million in Government subsidies (Douglas, 1980). Furthermore, the major processing companies such as Tasman paid no company tax until the present Labour Government took office. Marxists and neo-marxists would explain this as support for the ruling elite and the entrenchment of capitalism (Mishra 1977), though it is axiomatic that decision-makers are the elite. However, one of the ideological rationalisations for supporting industry was an underlying assumption (justification) that the benefits would 'trickle down' to the rest of society.

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6 Assistant Director of Forestry (1951-61) and Director General of Forests, NZFS (1961-71).

Although, New Zealand can be typified as following a capitalist, liberal, economic tradition, both capitalist and socialist economic development models imply industrialisation (Hoogvelt, 1978). The industrial utilisation of both the indigenous and plantation forest estates in New Zealand could thus be regarded as the inevitable choice. It became the dominant development strategy, especially after the Second World War when modernisation theories became vogue in the West (Hoogvelt, 1982). No doubt it also influenced the NZFS to conceive of a vast industrial scheme to utilise the beech forests of the West Coast. This would have entailed clearfelling 'over-mature' beech stands to allow regeneration and sustained yield management. However, large areas would have been converted into faster growing eucalypt forest too. This proposal led to the Maruia Declaration and the growth in strength and significance of NFAC and other environmental groups, as will be explained in Chapter 4.

The emphasis on heavy industry has waned in recent years in the West, with a shift to post-industrial development, based on services and high technology. Nevertheless, there is still a bias to technologically sophisticated, relatively capital intensive development, most recently epitomised by the previous (National) Government's emphasis on 'Think Big' projects.[7]

This development bias and subsequent government policies, relegates alternative forest-based uses such as beekeeping, possumming, deer trapping and craft woodworking to the lunatic fringe. From a technocratic perspective they appear to be folksy, pre-industrial throwbacks to an idealised rural past. Yet these activities are mostly environmentally benign, relying on the maintenance of the forest cover to survive.

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7 The first reference to these projects as a development strategy apparently occurred in 1980, with an emphasis on energy projects to diversify the economy away from primary production (Douglas, 1987). The Crown had become committed to a take-or-pay agreement for Maui Gas (signed by the Labour Government of 1972-75). Instead of choosing to leave the gas in the ground for future generations, or emphasising most efficient direct end-uses, the National Government instead opted to promote industrial projects which inefficiently converted the gas into other energy sources. Thus the new 1000 megawatt Huntly thermo-electric power station was converted, before completion, to run on gas and a synthetic gasoline project was commissioned to provide for 35% of the country's gasoline consumption. The latter project eventually cost $2.3 billion. An ammonia-urea plant, fuelled by gas and costing $130 million was also built, as was a methanol plant. Successive governments also supported a rolling programme to build a series of hydro electric generating stations on the Clutha river and elsewhere in Central Otago, in response to predicted increased demand for electricity. This demand did not eventuate, leading to surplus capacity which the National Government tried to eliminate by supporting the expansion of the Tiwai Point aluminium smelter (at Bluff) and promoting a smelter at Aromoana, at the entrance to the Dunedin harbour to use the energy produced from the Clyde dam at Cromwell. This dam and the proposed Aromoana smelter became an environmental *cause celebre*. Eventually the Government passed the National Development Act, 1979, to require that this and other projects deemed to be of 'national importance' would be built. There were ten 'Think Big' projects in all. $8 billion alone was invested in the ammonia-urea, Synfuels, methanol, Marsden Point oil refinery expansion and New Zealand Steel expansion, to yield $7.8 billion of debt and $1.2 billion annually to service this debt (Douglas and Callen, 1988). For a criticism of 'Think Big' see Clements, (1981).

Whilst some alternative forest-based users are not paragons of environmental virtue, they are caught up in a web woven by others, including national and international governments and corporations inclined to exploit resources, markets and each other for monetary gain or "competitive advantage". And so it is difficult for alternative users and alternative development philosophies to predominate.

Alternative forest-based users are in the main locally based, small scale, individual or family organised businesses with, by definition, a close association with the forest.[8] In a world rapidly waking up to the need for development based on sound ecological principles (sustainable development) they deserve more than cursory interest and the all too often sneer that they are 'minor' forest activities. In the Third World in particular, they are becoming increasingly recognised as an alternative focus of development and of such growing interest that the organisational framework which has evolved to facilitate them has become known as social forestry. (This is discussed below in paragraph 2.10).

In contrast to these small scale uses, continued inefficient and unsustainable industrial use of indigenous forests did not meet the NZFS's ideals of sustained utilisation . It did not serve the needs of individual alternative forest-based users either. Not many of the benefits of logging filtered down to them, but the detrimental consequences did. Ultimately it was not in the long-run regional interest either. Although a few decades of high employment was created, making forestry one of the most significant regional industries on the West Coast, it was only a few sawmillers, mostly domiciled outside the West Coast, who substantially benefited. Nationally, the demise of sustained-yield indigenous forestry will be a calamity too, as a shortage of home-grown special purpose species is forecast (Tilling and Clifton, 1984). Although alternative exotic special purpose species can be grown in New Zealand, they have been neglected.[9] New Zealand will become reliant on imported species for some special end uses, and thus be a party to deforestation elsewhere. For instance, as New Zealand kauri, *Agathis australis*, has become scarce and highly priced, imports of kauri from Fiji have eventuated. The present Labour Government has abandoned attempts to manage this species in Northland, foregoing the potential to harvest valuable timber on 80-100 year rotations, compared with the hundreds of years necessary for natural regeneration. In effect the New Zealand Government, in this particular instance, has externalised the

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8 Small enterprises epitomised the New Zealand business and industrial community until the proliferation of national and multinational corporations, especially evident in the 'Think Big' era and subsequent business deregulation, stock market boom and crash and present pre-occupation with high technology and service industries.

9 Up to ten thousand hectares of Australian Blackwood, *Acacia melanoxylon*, was to be planted in South Westland as a *quid pro quo* for the incorporation of South Okarito and Waikukupa indigenous

negative impact of its short-sighted policies to the less fortunate developing world. Paradoxically, the Government has recently announced that indigenous forests south of the Cook river are to be preserved and the area nominated for World Heritage status, but its monetarist policies discourage afforestation in substitute species and encourages the importation of special purpose timbers from countries whose forests are being decimated.

One of the ironies of the NZFS's indigenous forest management was not that multiple-use and sustained-yield management were attempted, nor that decision-makers were unaware that lowland indigenous forests were being depleted, but that decisive action to conserve the resource was lacking until an irretrievable ecological position had been reached: the unsustained use of indigenous forests represented a massive loss of economic potential. Only one timber harvest was realised and the terrace soils were not suitable for other productive uses. Similar unsustained forestry practices are taking place throughout the world. Neither neo-classical nor neo-marxist development models resolve these issues. Ideological policies based on the former promote competition for resources. They promote growth, obsolescence and waste. For neo-marxists, nature can be conquered with technology and appropriate social organisation (Ophuls, 1973). Neither of these two development models gives sufficient weight to the natural environment, as they owe their origins to a period when resources were seemingly unlimited.

## 2.5 Appropriate Technology.

The evidence is all too obvious that capitalist and socialist development models have led to economic inefficiency, environmental pollution, inhumane working conditions and a widening of the gap between the rich and the poor. Neo-classical economic theory seriously overlooks or undervalues ecological concerns, though increasing attempts have been made in recent years to take account of social and ecological changes in the assessment of development projects (Goodland and Ledec, 1987). Over the years cost-benefit analysis has been refined to take account of intangible environmental benefits, with varying degrees of success (see Price and Nair, 1984) and concepts such as 'safe minimum standards' are being used by the World Bank to supplement cost-benefit analysis (Goodland and Ledec, 1987). However, these refinements do not overcome the real difficulties of having to allocate scarce funds between development projects. Many subjective decisions and assumptions are inevitably made and real alternatives often ignored or deliberately down-played (Price and Nair, 1984). Part of the problem lies in attempts to reduce social, economic and physical variables to a common unit of

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forests into the Westland National Park. However, this project was abandoned by the present Labour Government in its drive for 'efficiency'.

measurement: a monetary value, and to demonstrate to donors that projects offer an acceptable return on investment. There are, however, alternative, non monetary methods of accounting (Burch, 1988).

Nevertheless, the philosophies on which the main development models have been based have had an insidious influence. In 1962, in a report to the Indian Government, E.F. Schumacher outlined the role of technology in economic development and three years later helped form a movement called the Intermediate Technology Development Group to develop and make known technologies appropriate to the needs and resources of poor people in poor communities: tools and equipment deliberately designed to be relatively small, simple, capital-saving and environmentally benign (Schumacher, 1980). His book 'Small is Beautiful' (1974) encapsulates this alternative approach and points the way to development 'with a human face'. Whilst Intermediate Technology focused on techniques for development, with particular application to the Third World (Dunn, 1978) Schumacher's concepts have global relevance too (Schumacher, 1978; 1980; Henderson, 1978; Kumar, 1982). This wider perspective includes some consideration of the social aspects of development too and has become known as Appropriate Technology (AT). As applied in industrial countries, AT focuses particularly on conservation, or wise use and management of resources, and on issues such as resource depletion and inefficiency, pollution and waste disposal. In short, AT advocates the need for advanced countries to substantially reorganise production to avoid social conflict and ecological damage.

However, Appropriate Technology emphasises products and technology, and gives inadequate treatment to the processes required to reach an envisaged ideal state (Weinstein and Pillai, 1979; Schnaiberg, 1980). Thus, although AT provides a normative model and specific techniques and tools, it does not give much guidance in determining how to overcome the socio-economic barriers to achieving environmentally sensitive, socially desirable and sustainable development. Since the development process is central to this research, concepts which embrace ecological, social and economic relationships are of more central interest. The pioneer of modern human geography, Paul Vidal de la Blache (1845-1918) provided one very important insight into these relationships.

## 2.6 Man-environment Relationships.

According to Buttimer (1971) Vidal de la Blache held the view that nature "should be considered as the dynamic interplay of living elements, a partner not a slave of human life". The core of Vidal de la Blache's method was the study of rural communities within their natural *milieu*, meaning within "the organically integrated physical and biotic

infrastructure of human life on earth" (Buttimer, 1971). He envisaged nature providing the *milieu de vie* of different people and that the world's population could be studied in this context; their adaptation to the natural resources of their *milieux* creating different *genre de vie*, or lifestyles. Each *genre de vie* reflected the rhythm of nature: each human group adapts in a particular way to its environment. Geography was thus an understanding of the dynamics of the natural environment and the way this had been modified in different *milieux*.

Whilst stressing the ecological relationship, Vidal de la Blache also acknowledged the possibility that man could overcome natural obstacles. He was thus not a rigid determinist, but, nevertheless, emphasised the primacy of the natural environment in shaping man's life on this planet. Yet, the concept did not seem to accommodate modern lifestyles, which, critics claimed, were not influenced by site-specific issues: his approach appeared to have greatest relevance for those with a primary relationship with the land. However some critics would re-define the concept, by, for instance, including a range of lifestyles and stressing relationships between them, rather than focussing on ecological relationships *per se*. Others would draw a distinction between site-related primary groups and situation-oriented systems. Buttimer (1971) is opposed to the school of thought that wishes to drop the concept, as this:

> *denies the overall evolutionary process from the early phase where site-related primary activities yield gradually to the impact of situational influences, eventually to reach relative degrees of autonomy from site through technology.*

The concept of lifestyles, being the adaptation of people to their environment, has a certain appeal when we consider the West Coast. Most of the alternative forest-based users are primary groups, who, it will be shown, are heavily influenced by the natural environment. Others are not so bound by nature and, by their actions, have some control over natural cycles and events. They can be differentiated by the degree of resource management they apply: they are not all the same. Furthermore, they can be conceptualised as being on a continuum. This provides us with a framework for discussing the different activities and those involved in them.

## 2.7 Management by Resource Users.

The commercial alternative forest-based users on the West Coast seem to fall into four broad, but not mutually exclusive groups:

- Resource harvesters
- Resource manipulators (i.e. manage resources to a small degree)
- Enhancers (farmers), and.
- Secondary manufacturers
- Service providers.

They can be thought of as being on a spectrum. At one end are those who take resources, without managing the resource (i.e. primary harvesters), through manipulators (i.e. some management ), to enhancers (i.e. farming to increase the resource), manufacturers (who use a base product to make other products) and service providers at the end of the spectrum, viz:

Figure 2.2 Spectrum of Users.

| Resource harvesters (primary users) | Manipulators | Enhancers | Manufacturers | Service Providers |
|---|---|---|---|---|
| moss collectors | moss producers | moss 'farmer' | | |
| possummers | possummers | | furriers | |
| deer trappers | | deer farmers | | |
| goat catchers | | goat farmers | | |
| venison shooters | | deer farmers | | |
| nurserymen (ponga poles) | nurserymen | nurserymen | | |
| | beekeepers | beekeepers | | |
| | | | charcoal | |
| | | | woodworkers | |
| | | | | tourist guides |
| | | | | services |

2.7.1 Resource Harvesters (primary users)

Historically, the Maori were primarily harvesters not managers of forest-based animals and botanic products, though agriculture was important too. (Live deer, possums and goats being not available to pre-contact Maori). They had been resident on the Coast for at least five[10] centuries before European settlement yet they had a relatively slight impact on the environment. This is because their numbers were few and their demands slight. Their technology was not advanced. Elsewhere in Aoteoroa fire was a devastating tool in the Maori arsenal, but on the Poutini Coast fires must have been less adverse, evidenced by the survival of most of the forest cover on the Coast up until the mid 19th century. Furthermore the Maori had a spiritual reverence for forests and derived many material products from them including medicinal remedies, food, fibre for baskets, twine and rope and wood for carving, building and other uses such as canoes. Hunting and gathering was an integral part of their existence, according to Forde (1964).

Despite the emergence of other industry since European contact, hunting and gathering as an economic activity still survives, (if barely). Without taking the analogy too far, present hunting and gathering is a relic of an ancient lifestyle and exhibits some of the characteristics of the classic 'food-gathering' economy. Lee and DeVore (1979) say

10 Carbon dating of sites excavated by Ray Hooker, of the Department of Conservation, Hokitika, at the southern most bay in South Westland (Big Bay) has established that Maori were living there at least 700 years ago (Christchurch, *The Press*, Feb. 4, 1989).

that "this way of life has been the most successful and persistent adaptation man has ever achieved". It provided "the sole source of livelihood open to any human society during nearly 98% of humanity's sojourn on this planet" (Childe, 1942) or more than 99 percent, according to Lee and DeVore (1979), dating back between one and two million years ago to the emergence of man himself (Bronowski, 1973). Sixty per cent of the estimated men who ever lived did so as hunter-gatherers, whilst 35 per cent have done so as agriculturalists, with the remainder having lived in industrial societies (Lee and DeVore, 1979).

The similarities between present and classical food gathering economies offer a clue to the limitations of this lifestyle compared with those based on the management and transformation of natural resources. For, in classical food gathering economies, man was "a parasite on other creatures....catching and collecting what food nature happened to provide" (Childe, 1942). To a greater or lesser degree modern West Coast trappers and gatherers still depend on what nature happens to provide. They take resources from the environment without supplementing or managing them, in contrast to farmers whose objective is to increase the resource, be it food or skins and other non-edible products.

Most hunting and gathering economies have only survived on any significant scale in relatively remote areas where the natural habitat has been least modified by activities such as agriculture, urbanisation and other population pressures. They are "isolated" (Childe, 1942) just as the West Coast is.

When pressure on resources got too great the only options were to move or starve (Bronowski, 1973). Hunters and gatherers had to move around. As resources were not actively managed or enhanced, the environment only supported a limited population and limited demands, not growing ones. The socio-economic system had to be modified to accommodate the latter. In other words, as yields declined, the costs of recovering ever more scarce resources from more and more remote areas increased, until it was no longer viable to continue the activity in that general locality. The same holds true today.

As there was little management or control over the resource, populations or biomass availability fluctuated according to demand or harvesting pressure. Today, the latter is highly influenced by the demand and price paid for the resource.

Furthermore animal numbers fluctuate according to the habitat available. Hence, there is a natural population explosion (when habitat is abundant) followed by a crash (when it becomes scarce), until an equilibrium is reached. For example, possums are on the

increase in South Westland, but are reported to be fewer in number in some other localities.

In these circumstances one can expect a variable supply of resources as demand and natural systems interact. Variability is inherent: not only in terms of the quantity of resources but also the quality or consistency of resources available over time. Quantity and quality cannot be guaranteed because resources are unmanaged. The gatherer is subservient to nature's ways.

With a persistent and increasing market demand spurring a similar harvesting effort, one can expect the inherent quality and incidence of the resource to diminish in the long run, if the rate of harvesting exceeds natural regeneration. (In the short run, inherent quality of animals may improve if resource numbers are reduced from maximum to optimum carrying capacity, i.e. as excessive numbers are culled). With no manipulation or enhancement of moss, one would expect availability and quality to be reduced in the long term, if attempts are made to continually increase output. One can also expect income and employment to fluctuate accordingly, unless demand continues for a relatively poorer product.

In the classical period, exclusive rights to resources were rare:

> *Since everyone knows where the food is.....and since everyone knows the movements of everyone else, there is a lack of concern that food resources will fail or be appropriated by others* (Lee and DeVore, 1979).

Most West Coast harvesters do not control or own the natural resource either. But unlike the classical hunter-gatherers, many only have short term leases and, on past experience, fear that access and control of resources will be appropriated by others. A similar phenomenon eventually led to the demise of hunter-gatherer societies, as Lee and DeVore (1979) explain:

> *When the means of production come to depend on exclusive control of resources and facilities, then the loose non-corporate nature of small scale society cannot be maintained. If this view is correct, then a major trend in human affairs has been the transformations of social relations as advanced technologies and formal institutions have come to play a more and more dominant role in human adaptation. The institutions of property, of clan organisation, of government, and the state did not spring full-blown in a divine creation.*

If long term access to resources is uncertain and this persists, then one can hypothesise that there will be a strong tendency to 'mine' the resource (e.g. moss) and remain at the resource harvester end of the spectrum. The transition to sustained-yield management will be stifled. (Whilst the extermination of introduced feral animals may be welcomed

by those seeking to preserve a 'pristine' environment, such an attitude is in conflict with those seeking to make a living from these animals. This is a very different situation to growing sphagnum moss on a sustained-yield basis).

### 2.7.2 Resource Manipulators.

If resource gatherers desire more stable conditions, then one option is to try to manage the resource. Some users do this, albeit in a rudimentary fashion: moss harvesters actively took some steps to ensure future harvesting (see Chapter 7). However, ownership or long term access is a prerequisite to the stewardship of resources, but DOC issued moss licences on a month by month basis as policies were under review.

One of the glaring inadequacies on the West Coast is the past and continuing failure to manage resources for their widest potential. In the past this has been typified by narrow sectoral policies and the late realisation of multiple-use management. This has left large gaps in knowledge about the distribution of resources and what constitutes sustained-yield. Resource management is not being adequately undertaken (later this will be explained in more detail). As management is one of the prerequisites for moving from resource harvesting to resource manipulation and eventually to resource enhancement there are long term negative consequences for alternative forest-based activities.

### 2.7.3 Resource Enhancers.

Enhancers improve resources by farming them. In this way uncertainty can be reduced and quantity and quality can be more assured.

The irony is that farming reduces the viability of free-range forest-based production, based on the perceived relative abundance and close proximity of wild resources on the West Coast. The deer and goat industry has already moved in this direction and, as we shall see, has affected the viability of feral capture. Forest-based activities based on feral stock are thus likely to survive only if it is technically impossible or uneconomic to substitute farming for feral harvesting.

Resource enhancement may not appeal to harvesters and manipulators if it entails the loss of excitement or the freedom of being in the bush, which so many value. Some may be able to compensate for the loss by continuing harvesting as a hobby.. For ,as Washburn and Lancaster (1979) comment:

> *Men enjoy hunting and killing, and these activities are continued as sports when they are no longer economically necessary. If a behaviour is important to the*

*survival of a species (as hunting was for man throughout most of human history) then it must be easily learned and pleasurable* (empahasis added)

(The full significance of this statement will become apparent in Chapter 5).

If the activity can be continued as a hobby when it ceases to be economically viable, then it is possible to partially combine different lifestyles. The Coast is one of the few places in New Zealand where this is possible because of the close proximity of the forest.

However, if enhancement requires large capital resources, this management option will be out of reach to many resource harvesters and manipulators, unless it can be built up slowly or in stages. This is possible in beekeeping but it may take considerable time to build up to an full-time viable occupation. To move from deer trapping to full-time deer farming also takes time, if the herd is to be stocked with feral animals. Enhancement also favours those with low debt and ready access to land (in the present high interest situation). Those with capital shortages are at a disadvantage.

### 2.7.4 Manufacturers.

Manufacturing is a different process from harvesting or enhancing (farming) a resource. It is an indoor activity (except for charcoal making), requiring different skills. For instance, a successful craftsperson needs to be innovative and creative (unless traditional items are being made) and be dextrous. The combination of these skills is rare on the Coast (and perhaps in New Zealand). It requires the exposure of the craftsperson to new ideas, trends and manufacturing techniques.

Thus it is likely to attract a different type of person to those harvesting, manipulating or farming resources. Coupled with the fact that manufacturing does not take place in the outdoor environment so appreciated by harvesters, manipulators and enhancers, it is highly unlikely that the latter will make a switch to manufacturing.

As ordinary, run-of-the-mill goods cannot compete with those readily available close to mass markets, it is likely that the most successful West Coast forest-based manufactured products will have an intrinsic value of their own, imbued with the skills of the manufacturer.

### 2.7.5 Service Providers.

Those who provide a service, such as guides, are different from the other groups on the spectrum. They do not take products from the environment, nor do they manipulate them or enhance them to increase the amount available. The environment is a backdrop

to their activity. In the case of guides, people are the resource. They are the ones being catered for. It is their clients, such as safari hunters, who may be harvesters (primary users). The client relationship, being the main relationship, is thus likely to feature more prominently than the environmental relationship, though the latter is essential.

The spectrum helps us conceptualise how resources are likely to be managed by different users, producing different ways of life. We can expect these lifestyles to differ from group to group and also within-group, depending on how much time and effort is involved, the different organisational settings and the influence of market factors. However, the concept of lifestyles is not sufficient to understand the complexity of present interrelationships between alternative forest-based users, the environment, economy and society. Some users may not wish to have greater control over their operations, preferring a relatively unstructured carefree existence, whilst others may find that it is impossible to move further along the spectrum because of economic, social and institutional factors. These have been alluded to, but now need further explanation, as they play a crucial role in the management of resources. At the core of the debate are proprietary rights.

## 2.8 Proprietary Rights and Long Term Management.

Rights to use land, forests and associated areas and products, collectively referred to as 'tenure' (Bruce and Fortmann, 1988) have been central to the use and abuse of these resources since the beginning of time. They are a social phenomena, but, more importantly, they bring together the interrelated issues of the economy, ecosystems and social systems mentioned above (Burch, 1975). These rights are complex: they may be held by communities, individuals or the state and, with respect to a piece of land, they are not necessarily mutually exclusive. For instance, the Maori have traditional rights to use certain forest resources for cultural purposes even though the ownership and management of those resources are vested in the Crown.

Two bodies of theory help provide an understanding of tenure: that of individual tenure and investment on the one hand, and common property theory on the other (Bruce and Fortmann, 1988). Individual ownership of property and the right to use it as we please are institutions promoted by the laissez-faire philosophies of John Locke, Adam Smith and their neo-classical successors. As noted above though, the use of land and water can bring unwanted off-site consequences. Hence, society has seen fit to regulate the use of land and appropriate it if necessary. Thus most of the West Coast's highland indigenous forest is publicly owned principally for water and soil conservation purposes. Furthermore, private ownership can deprive the community of access to and appreciation of highly esteemed cultural, spiritual and recreational values; hence public

action is taken to remove resources, such as forests, from the market process. This public intervention to limit environmental abuse is the hallmark of modern land-use planning in Britain, the U.S.A. (Webber, 1969) New Zealand and many other nations.

Common property theory was developed by Hardin (1968) and others who contend that resources held in common are inevitably overexploited and degraded. Hardin revived William Forster Lloyd's classic essay of 1832 which related to the grazing of the commons (Hardin and Baden, 1977; Ophuls, 1977). Three assumptions were critical: resources were open ('free') to uncontrolled exploitation; use could be accommodated up to the resource carrying capacity, beyond which the resource deteriorated, and lastly deterioration and ruin were inevitable in the absence of regulation. Privatisation or intervention by an external authority (government) were seen as necessary to circumvent the inevitable destruction caused by common ownership (McCay and Acheson, 1987).

This argument has subsequently been applied to other resources held in common, such as forests, fisheries, air and water. However, the tragedy of the commons model has been criticised as being deterministic or mechanistic (Berkes, 1987) and ahistoric (Peters, 1987). Access to common land is rarely free (see Berkes, 1987). Furthermore, humans are highly adaptable and have instituted elaborate checks on individual use (Reader, 1988). Nevertheless, the preservation and maintenance of natural resources may not be in the self interest of all, as it may pay some entrepreneurs to kill the golden goose, if profits gained by acting irresponsibly are greater than those gained by acting responsibly (Fife (1971). As Anderson (1987) points out with respect to a Malaysian fishery, in a conflict over a declining resource, the rich invariably benefit at the expense of the poor. Stillman (1975) argues that there is no logical solution to the commons parable which would be consistent with the assumptions and argues that the only solution is to change the parameters, especially by improving ecologically sensitive technologies and by changing people's attitudes and the institutions and laws that support them. Whilst these changes would be of undoubted benefit, the tragedy of the commons argument has fallen into disrepute primarily because the assumptions of the model have been shown to be faulty.

The historical use of indigenous forests in New Zealand provides examples of communal ownership, but limited access during the classical Maori period, the usurping of these rights by the Crown by the Arahura Purchase, the subsequent freeholding of land by European settlers, bringing the destruction of forests to create pasture and finally the failure of sustained-yield forestry by the NZFS. Thus neither private nor

public ownership of land *per se* is a guarantee that environmentally benign policies will be followed, as will be demonstrated in Chapters 4 and 5.

It will be shown that the level and rate of demand and the management or control of resources is crucial. This may be self-applied or externally imposed, but, in either case, if this management is inadequate, resources can be irreparably degraded. There are many factors which inhibit effective management, from a lack of knowledge about the resource in question, tenure issues and financial constraints to institutional arrangements and political will. The issue cannot be reduced to a simple deterministic model as there are many ways in which resources are used and managed (for examples see Fortmann and Bruce, 1988).

Ownership and control of resources do confer a potential for sound management and, in the case of publicly owned resources, a justification and obligation to optimise net social benefits. It is significant that approximately 89% of the West Coast is under Crown or State Owned Enterprise tenures and hence the alternative forest-based uses under study are predominantly undertaken or reliant on resources derived from public land. Whilst a very small proportion of animals are captured or killed on private land, a larger proportion of sphagnum moss is probably harvested from private land on the coastal lowlands.[11] Nevertheless, the viability of the present moss industry is dependent on the continued availability of moss from public land.

'Control' of West Coast resources has been and is one of the most contentious development issues. The most powerful lobbies mediate access to and the allocation of indigenous forests for financial and non-financial use. In an unrestrained market, monopoly capital usurps or controls production and distribution systems, as it has with commercial activities on the Coast. This has ramifications for regional development as local benefits are likely to be less. Pitted against this commercial influence is the non-consumptive lobby, which has been successful in restricting commercial production, but is dominated by non-Coasters.

It will be argued later that management is needed to increase the quality and quantity of products and reduce risks and crises caused by the absence of control, poor control or usurped control of resources. There is a local desire for independence and reduced bureaucratic involvement in commercial activities on the Coast: but, paradoxically, a desire for more government economic and management support. Hence a dilemma: what type and level of intervention is appropriate?

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11 The amount of moss actually harvested from private as opposed to public land is unknown as accurate records do not exist.

Whilst it will be argued that it is appropriate for government agencies to support alternative forest-based activities, it will be shown that there are wider national and international processes that affect forest-based users and local bureaucratic decision-makers. But it is only comparatively recently that it has been realised that these require a global outlook. This has led to a World Order approach to development, which recognises the interrelationship of a whole array of issues and the often fruitless attempt to try and deal with these at a local or even national level.

## 2.9 The World Order Approach.

Industrialisation and continued and increasing economic growth suffered a fundamental challenge with the Club of Rome's publication called 'The Limits to Growth' (Meadows, *et al*, 1972). The subsequent oil shocks of the 1970's, and disasters such as Three Mile Island and Chernobyl brought a dawning realisation that not all was well with planet earth. Yet it seems that only these and similar spectacular disasters have forced politicians and resource managers to take action, though not necessarily change development strategy. Just as potentially damaging are the often neglected, insidious detrimental changes that are taking place everyday. These are not spectacular and action can seemingly be deferred. However, cumulatively they can lead to disaster, as in the case of ozone depletion. By the time the issue becomes pressing, irreversible damage has occurred. This seems to have be the case with West Coast indigenous forests: decisions to limit timber demand were deferred until environmentalist pressures built up to a point which made preservation a popular national option. By the time concerted action was taken by the Labour Government in 1986, large areas of lowland podocarp forests had already been lost forever. This deferment of action to conserve resources is not unique to New Zealand, but typical world-wide and prompted Tolba (1987) to ask:

> *Why must we keep lurching from crisis to crisis? Why do we always have to wait for a disaster such as a famine or the Bhopal and Mexican city incidents before taking action?*

Not so long ago environmental problems were localised and resources were seemingly plentiful. New frontiers could be exploited. Nowadays, with an exponential growth in world population, resource consumption and pollution, together with the growth of world trade, it has been belatedly recognised that resource conflicts are increasing. Resources are now scarce and the lead time between the manifestation of ecological imbalances and the need for decisive remedial action is being reduced all the time. As pressures on the environment are escalating, environmental crises are increasing in frequency. Decision-makers have not kept abreast with this. They thought they could muddle through, tackling environmental problems in a leisurely, piecemeal fashion. Suddenly, problems are no longer localised; some have led to international

confrontations, others to over dependency on non-renewable energy supplies and others are life threatening, such as the greenhouse effect, nuclear energy and waste disposal and the nuclear arms race. As a result, global action has now been seen by many governments to be vital

The World Order approach that has developed recognises these global issues and the inter-dependence of the world's economies, especially those of the First and Third Worlds. A redistribution of resources between the former (the North) and the latter (the South) is advocated. Two broad, but dissimilar lines of intellectual inquiry are being carried out, according to Falk, (1982). One focuses on the character of world order problems and implications for sovereign states and on goals and values as tests of whether a system is working and for whom, with a view to designing more acceptable state systems. The other line of inquiry centres on a multitude of social problems arising from the world situation, grouped around war/peace issues, economic well-being, human rights and ecological balance. A holistic, systematic and integrative approach to problem solving is advocated, such as that developed by the ecological school.

The human ecological approach offers a framework to consider the interrelationships mentioned above and is of particular relevance to the West Coast. One fundamental human ecological concern is the ability of natural systems to sustain human demands placed on them. Adherents of the ecological approach recognise that the environment's ability to cope is not unlimited, as is evident from the problems caused by pollution, i.e. the inability of the ecosystem to recycle human wastes. This observation is crucial, especially as the environment (the physical world) and development (change induced by man) are inseparable (World Commission on Environment and Development, 1987). Because of the complex interrelationship between ecological phenomena and social and economic processes, an integrated approach to decision making is deemed essential.

One of the central tenets of the human ecological view is that the world's population urgently needs to live within the planet's ecological capacity, if development is to be sustainable. This raises a dilemma as the world distribution of resources is unequal and access to them is inequitable. For instance, the First World's consumption of natural resources is many times that of the Third's, with the latter supplying the voracious demands of the former just to survive. Whilst the industrialised world ought to reduce its level of resource consumption to a rate that is within ecological limits, it is unjust and unrealistic to expect lesser developed countries to reduce their rate of growth. They need appropriate economic development to provide for basic human needs and to alleviate the suffering of the poor. This requires a fairer system of international trade

and exchange. New Zealand, as a trading nation, is inexorably caught up in this web and, like Third World countries, supplies raw materials to the industrialised world. Many alternative forest-based users on the West Coast are dependent on international trade. Like primary producers in the Third World, most West Coast forest-based entrepreneurs suffer from fluctuations in commodity prices over which they and the New Zealand Government have no control. Furthermore, they are manipulated and are hostage to foreign importers who are little concerned about the environmental consequences of their voracious demands on the West Coast. But West Coaster's want economic development now, as jobs and opportunities are scarce. Hence, many Coasters appear to be ambivalent about environmental management, if this entails deferred gratification. This poses problems when considering the future use of resources which may not be ecologically sustainable.

According to the ecological view, a fundamental change of attitudes to economic development is necessary. This is both a global and political issue with national, regional and local ramifications (World Commission on Environment and Development, 1987). However, our whole social and economic system is geared to consuming and not conserving resources, raising questions about how to bring about a steady-state economy without major social, economic and political disruptions.

It will be also be argued that present and future commercial opportunities in indigenous forests will be lost or not fully realised at a local, regional and national level if present government economic and institutional arrangements continue. However, the present Government is in a tight financial situation and is in no mood to re-allocate scarce financial resources to resource management issues, as it has not fully grasped the connection between the environment, society and the economy. It has sought a "quick economic fix", before turning to social issues and does not favour a programme which promises long term public intervention. The main opposition party is in a similar boat and even if it were to win the next general election, scheduled for November 1990, it is unlikely to deviate very far from the present Government's position.

Budgetary restrictions are severe. The Government is attempting to reduce funds to most of its agencies, not increase them. Hence, alternative forest-based users and local resource managers will probably have to learn to manage with less government financial help, which often translates into fewer personnel to carry-out essential tasks, over-work and a deterioration in the level of service. More local co-operation will become imperative: social forestry offers a way of achieving this. It fosters cooperation instead of confrontation between users and resource managers, to their mutual advantage.

## 2.10 Social Forestry.

The prevailing development ethic in New Zealand does not recognise the significance of alternative commercial forest-based uses. Monetarists, such as those in the Treasury and Parliament, would dismiss most of the alternative uses as being of marginal interest. "If these uses do not survive in this competitive world, then they are obviously inefficient and not meritorious of government support."

Nevertheless, unlike the slash and burn industrial indigenous forestry of the past, alternative forest-based activities are potentially more appropriate uses for the West Coast. They have the potential to provide for local needs, such as income and social stability, yet, at the same time, maintain and enhance the forest cover. These attributes have been ascribed to social forestry, which has been thought most applicable to Third World countries where populations are growing rapidly, lands and forests are being ravaged and few industrial, urban-based opportunities exist. In these circumstances, social forestry may be one of a few permanent subsistence strategies (Burch, 1988).

Social and community forestry are labels which have been used interchangeably to denote a communal approach to forestry development programs principally in the Third World. The approach has been described by Pardo (1985) as one which closely involves local people in forestry activities for which people assume responsibility and from which they derive a direct benefit through their own effort. However, one of the problems with this subject is that there is a confusion in the literature over definitions. The Food and Agriculture Organisation of the United Nations (FAO, 1978) defined social forestry as any situation which intimately involves local people in a forestry activity, ranging from woodlots in areas which are short of wood and other forest products for local needs, to the growing of trees at the farm level. It excludes large-scale industrial forestry and any other form of forestry that contributes to communities solely through employment and wages, but includes activities of forestry industry and public forestry activities at the community level (quoted by Rao, 1983). But is not all forestry directed to human ends and in this respect 'social'?

Slade and Campbell (1986) are more specific about social forestry. They claim that it is generally understood to mean *tree growing* (including associated products such as bamboo, grasses and legumes) for rural development (their emphasis). The focus on tree growing is, however, too narrow a definition for our purposes. Why should forestry be restricted to tree growing anyway? Similarly, the communal organisational framework is too restrictive to encompass all non-industrial forestry. It would be better to reserve this definition for community forestry, leaving social forestry to encompass a wider perspective.

More and more, forestry is being regarded in a wider context. It is being associated with conserving and protecting resources. One very common element in social forestry programmes is the need for sustainable increases in productivity from the land, whilst there is an increasingly recognised potential to restore or prevent further deterioration to fragile or degraded sites (Gregersen, 1988). This wide compass embraces the growing of trees and tending of forests; the relationship of forests to other land-uses and systems, such as agriculture, and products other than wood and fibre for commercial/industrial use. This is exemplified by the promotion of social forestry in Nepal to provide fodder, firewood and other basic materials for a peasant agrarian society (Mahat *et al*, 1986a, 1986b, 1987a, 1987b and Griffin *et al*, 1988).

From this purview, social forestry can be associated with alternative forest-based activities examined in this study. The very survival of these activities depend on the sustained-use of resources and the maintenance of a healthy forest environment and, at present, these activities provide local employment and income, by the direct involvement of local people.

It is apparent that though non-industrial activities and uses are of social benefit, historically they have not given adequate recognition by development agencies because the benefits accruing to society have been regarded as economically "minor," or not part of the "formal" economy or of indirect importance, i.e. less visible and sometimes intangible. These uses are often of fundamental importance though, providing for basic needs. As the industrial use of forests in the Third World has, in most cases, led to forest destruction and has not improved the social and economic well-being of the rural poor, development agencies have come to focus on basic human needs. Hence, Rao (1983) suggests that forestry can:

> *...be consciously directed towards rural development and managed with the major objective of alleviating poverty. This is often referred to as the social role of forestry.*

Implicit in this statement is a concern for the distribution of net benefits from forest-based activities and access to them. Thus, for Rebugio (1985) the dominant value orientation of social forestry should be equity. This concern with distribution of resources and fair and equitable access to them and the benefits from their use is rapidly differentiating social from industrial forestry. Hence, attention is increasingly being focused on the need to ensure that local people are the principal beneficiaries of social forestry programmes (Ford Foundation, 1985).

There are, however, more pressing reasons why social forestry is rapidly gathering support. Deforestation has reached catastrophic proportions. In India for example it is

estimated that 22 million ha of village forests have been destroyed in the last 30 years due to over-exploitation and conversion to agriculture (Mathur and Soni, 1986). There are many reasons for this (Vyas, N.N. [Ed.], 1981). Conventional forestry services are severely restricted in their scope and have not coped with this situation. Self-help is thus perceived as being imperative: costs can be reduced, trees can be grown where they are needed and local people can decide on their own priorities, species and locations to plant (Foley and Barnard, 1984).

In recent years, development workers have become increasingly disenchanted with development theory which holds that economic benefits from investment decisions will flow through society, (depending on the multiplier effect). The assumption has been that benefits will trickle-down and outwards to those not directly involved in the investment decision, thus raising the standard of living of society as a whole. However, this has not been the case in practice (Eckholm, 1979). Most of the benefits have accrued to those who are already better off. The rich get richer whilst the poor get poorer. According to Westoby (1975 ) forestry aid and investment has not been directed to helping the rural poor in developing countries, but has served primarily to assist the penetration of foreign investment and foreign exploitation for foreign profit. Hence, community development has been advocated specifically to enhance the socio-economic position of those most in need and, increasingly, the poorest of the poor.

Another reason for the re-orientation of forestry has been a need to increase village income, through the production of food, fodder, fibres, medicine and forest goods for industry on previously uncultivated land (Romm, 1982). One of the most pressing requirements, often of indirect economic significance, is of fundamental importance: the need to create community woodlots to alleviate the worsening fuelwood crisis (West, 1978).

A further aim is to conserve forests and land resources by reducing the current pressure on them for the above commodities. In order to achieve this, attention is being focused on making more productive and sustainable use of deteriorating lands, the impoverishment of which has led to a decline in the standard of living and the resources necessary for national development (Romm, 1982). Specifically, one objective is to reforest denuded slopes to prevent flooding and erosion that threatens agricultural productivity (West, 1978).

These pressing requirements may seem self evident to those with even a smattering of knowledge of development issues. Yet a number of prerequisites must be met before they can be fulfilled. Firstly, governments must be philosophically inclined to this mode of development and must provide support where necessary (Rao, 1983) as the

poor do not have the necessary financial resources or management expertise. In fact, in the Third World, social forestry covers a sector of the economy that is often "non-monetarised" (Noronha and Sears, 1985) and economically marginal. Hence, social forestry programmes that have been successful have had high level political support, which is crucial (Gregersen, 1988). Secondly, an appropriate land tenure system which gives the community some control, ownership and/or administration over the resource is necessary (Shepherd, 1983). In addition, governments must be willing and able to provide financial support, long term commitment and suitable expertise (Shepherd, 1983; Rao, 1983). It is also essential that governments are aware of the potential integrative role of social forestry in rural development. Few governments, [including New Zealand's] have this awareness (Rao, 1978). Furthermore, commitment by the local community is fundamental for success. A considerable degree of inertia may exist, for good reason, e.g. agricultural land may have become less and less productive, or the incentive may not exist to change. Local commitment will, according to Shepherd (1983), usually be sparked off by one or more enlightened individuals, who must seek external assistance if they are to succeed.

Social forestry must reflect the needs, aspirations and problems of the people and involve them (Rao, 1983). Preconceived solutions or those paternalistically or dictatorially imposed will not often succeed. Technical solutions should be worked out with the people and not for them (Rao, 1983). Usually, rural people cannot wait for long term returns; thus ways must be found to provide more immediate income.

Though local development must involve existing institutions, these can also be an impediment to change. New ones may be necessary and should be encouraged (Rao, 1983). Furthermore, a change in attitude by government officials may be necessary, through training and education (Rao, 1983; Griffin *et al* ,1988). This is by no means easy when the process of deforestation has been going on for centuries (Griffin *et al*, 1988) and when there is a misguided belief that communities living near forests are responsible for most of the forest damage. Furthermore, protective legislation often brings restrictions and controls and the need to police forests from "illegal" harvesting (Chopra, 1987). Confrontations then build up between local people and forest administrators. Antagonistic attitudes have to be changed. In addition, extension services may need support in terms of expertise, materials and techniques and forestry personnel need social science skills or access to them (Rambo, 1984; Burch, 1988).

Most of these observations have been derived from experiences in Third World countries, yet there is no reason to restrict our vision to the most desperate nations of this planet. Similar conditions exist in the so-called developed countries, though often

in less extreme forms. For example, although the West Coast of the South Island, New Zealand does not suffer from the same population pressures and deprivation as Third World countries, it has much in common with them: it is peripheral to the metropolitan centre and markets; relies on a narrow resource base which has been plundered and mined; and has little prospect of diversifying its economy which is controlled by externally-based entrepreneurs. The population may not be burgeoning, but the unemployment level is high, above the national average. There is a social welfare system which prevents starvation, but socio-economic problems appear to be intractable. Much of this could be said about other regions in New Zealand too. Industrial use of the bulk of the West Coast forests has now been recognised as being inappropriate as nearly 90% are legally protected from logging. Only a small residual area of lowland forests has been allocated for this purpose (see Chapter 1). Thus, an alternative to the conventional forest management framework is now required, which recognises the Government's desire to protect the forest cover, yet at the same time provides for local socio-economic needs.

Widening our perspective, we see that the use of forests and other natural resources in New Zealand is of central national concern at the moment and is likely to be even more contentious in future as pressures on resources increase. Control of resources and access to them is at the nub of the issue: Maori fishing and land claims are on the ascendency. These grievances, dating back to the signing of the Treaty of Waitangi in 1840, are being heard by the reconstituted Waitangi Tribunal. This has produced a defensive reaction in some Pakeha quarters, particularly amongst fishermen. There is a mutual mistrust between the various claimants, not just between Maori and Pakeha but also between the Maori themselves. Thus, a more co-operative approach is necessary to alleviate future conflict, just as it is in some Third World countries. As social forestry fosters co-operation and commitment to 'development and conservation', rather than confrontation between policy makers and community groups, one might expect it to have increasing relevance. In addition, as the Maori are the largest socio-economically deprived group in New Zealand and as they have a re-emerging tradition of communal organisation, community forestry promises to be an increasingly attractive process for providing for their needs.

## 2.11 Summary.

A conceptual framework has been presented as a basis for explaining why multiple-use management of indigenous forests on the West Coast was so late in evolving. It is clear that there are drawbacks in trying to make rational explanations of bureaucratic decisions, as these decisions can be unintentional and unpredictable. One needs to consider government organisations and their operating procedures, the individuals and

personalities involved and the social and political context in which the decisions are made. Bachrach and Baratz's notion of a 'mobilisation of bias' maintained by 'non-decision making' was elucidated as a possible reason why multiple-use management and social forestry has not assumed prominence in New Zealand. It did not do so because of a number of possible reasons, including the training foresters received and the development ethic held by successive governments, emphasising industrialisation, technology and capital intensive growth, underpinned by neo-classical economic theory. This offers an explanation for the razing of forests and the prevalence of industrial forestry. In addition, however, past land-use practices, based on a long evolved pastoral system brought from Europe and a subsequent perceived timber shortage also produced a bias against sustaining alternative forest-based uses.

Unfortunately, neo-marxist development theories and socialist ideologies would probably not have brought much relief. In common with neo-classical theories, they are based on a belief that nature can be conquered. Both mainstream theories are inadequate in dealing with scarcity and the need to conserve resources, as they promote materialism and waste. Appropriate Technology offers concepts, tools and techniques which are appropriate to the circumstances of poor people and which are environmentally benign, but does not focus sufficiently on the socio-economic process necessary to achieve more appropriate development conditions. As processes, rather than products are of interest in this research, the ideas of Vidal de la Blache are of interest. His approach helps differentiate forest-based users, but does not provide a sufficient explanation of the intricate interrelationships under consideration. The management of resources was shown to be critical. Tenure is a central issue, but neither private nor public ownership *per se* is sufficient to ensure the wise use of resources: the control and management of resources and the determination of who has access to them is fundamental to the way they are used. In New Zealand, the dominant economic development model has promoted individualism and a preference for private enterprise and produced a range of occupations and institutions geared to the systematic exploitation of forests through time. People are regarded as factors of production, land and forests as commodities. Long term resource management is rare and anathema to a society geared to short term monetary gain. Hence, the World Order view is more satisfactory for our purposes. The ecological approach in particular is of interest as it focuses on the sustained use of resources and the maintenance of harmonious relations between society and nature. But, a paradigm shift to this approach is difficult given the present Government and Opposition's philosophical position and budgetary constraints.

Social forestry offers a way of partially resolving this issue. Adopting this perspective, we see a different range of occupational groups to those we have been accustomed to

identify with forestry. Furthermore, this approach offers a way of utilising local skills and knowledge to manage resources and hence help maintain a sound environment, to the mutual benefit of all. Given a situation in which bureaucratic resource managers find that their finances and personnel are severely stretched, due to budget constraints and that their budgets are declining in real terms, there is increasing pressure to find non-conventional ways of doing more with fewer and fewer resources. And, in the long run, it is in the interest of resource managers, alternative forest-based users and society in general that the sustained-use of indigenous forests is realised.

The next chapter sets out the boundaries of the study, alternative methodologies and the approach adopted to build up an historical appreciation of indigenous forest management and an understanding of present users.

# CHAPTER 3. METHODOLOGY.

## 3.1 Introduction.

This study deals with a very real problem confronting development workers world-wide: why are seemingly well thought-out plans and policies never implemented or only partially realised?

To answer this question a broad approach is necessary. Thus, the study is deliberately eclectic and multi-disciplinary. If a concept or idea seems useful, it has been used. This poses considerable challenges, as the breadth of subject matter that has to be tackled is wide. In essence, a synthesis is attempted and the nature of the data makes it largely a descriptive exercise. Inevitably, compromises are necessary. The study is also exploratory, as hardly any socio-economic research had previously been done on commercial alternative forest-based uses in New Zealand, let alone the West Coast.

The research was designed to build up a profile of the nature and importance of and future prospects for alternative forest-based uses, other than wood harvesting and industrial processing. These produce what is sometimes euphemistically termed 'minor forest products' to differentiate them from 'industrial' forest products, such as sawn timber and pulp wood for commercial mills. The study is limited to purely commercial uses which provide direct monetary benefits to operators. This limited focus was deliberate, even though it is acknowledged that indirect monetary values, from recreation spending for instance, can be sizeable. Firewood gathering was also excluded as it was thought that many people salvaged this themselves from the forest or from the beach, as is done in South Westland. Although this produces a monetary benefit, it is an indirect gain and thus outside the scope of the research.

Thus, the study does not attempt to be comprehensive. It is not an exhaustive attempt to put an overall value on indigenous forests or to explore every existing or potential commercial use. Such an exercise was not attempted because it is difficult to assign values to the multiple-uses of forests, despite increasing attempts to do so (Clawson, 1978). Apart from being a PhD topic in itself, even if one could derive an estimate of the total value of alternative forest-based activities compared with that derived from timber and wood fibre, the answer would be academic in the sense that it would have been too late to affect the allocation of forests on the West Coast: probably twenty years too late! So, although the interest of the research is on the realisation of long term employment and income prospects, this should not be construed to mean that this is an attempt to pick "winners". The activities that have been examined should rather be

regarded as case studies of the development process and the inherent problems and possibilities therein.

## 3.2 Concepts and Boundaries.

The decision to study alternative forest-based uses and the setting of objectives immediately places boundaries or constraints on the nature and type of data that are sought. The efficacy of thus proceeding has been indirectly criticised by Cohen (1978) when referring to detailed accounts of research methods by anthropologists. He states:

> *The determination of how you are going to study must also be a determination of what you are going to study and that of course determines the ultimate conclusions. If one conceives research to be no more than the putative testing of an hypothesis, preclusive methodology does not matter because the very definition of the terms of the hypothesis biases the procedure. If, though, one's ambition is to conduct a much more open enquiry, to "close up on what's going on", then the "pre-empirical" methodological charter has to be discarded: one is bound to take one's cues from the field in identifying the salient issues and, in turn, the appropriate methods for their investigation. It is clearly the case that one must start out with a vague conception of* (the) *problem.*

If Cohen is referring to the fitting of data to a preconceived technique, then this statement is valid if it precludes other considerations. However, if he is asserting that research can be value free he is wrong. One has to start somewhere and have an open mind on the meaning of the data collected. It does not necessarily follow that one must start out with a vague conception of the problem.

The study started with an awareness that many development projects had failed to reach their objectives because of inadequate consideration of social and environmental factors and the inappropriateness of capitalist and socialist development models. As Appropriate Technology (AT) advocates the need for First World countries to substantially reorganise production to avoid social conflict and ecological damage, it was decided to undertake a Dialog[1] search of the literature on AT/Intermediate Technology and Forestry. But, AT did not deal adequately with the processes of development. For the purpose of the research it was necessary to study a particular development issue. The use of West Coast indigenous forests provided hosts of issues, as logging was being curtailed and other development options appeared limited. Thus, indigenous forestry on the West Coast and the need to consider alternative forms of development formed the basis of the study, as illustrated in Figure 3.1, overleaf.

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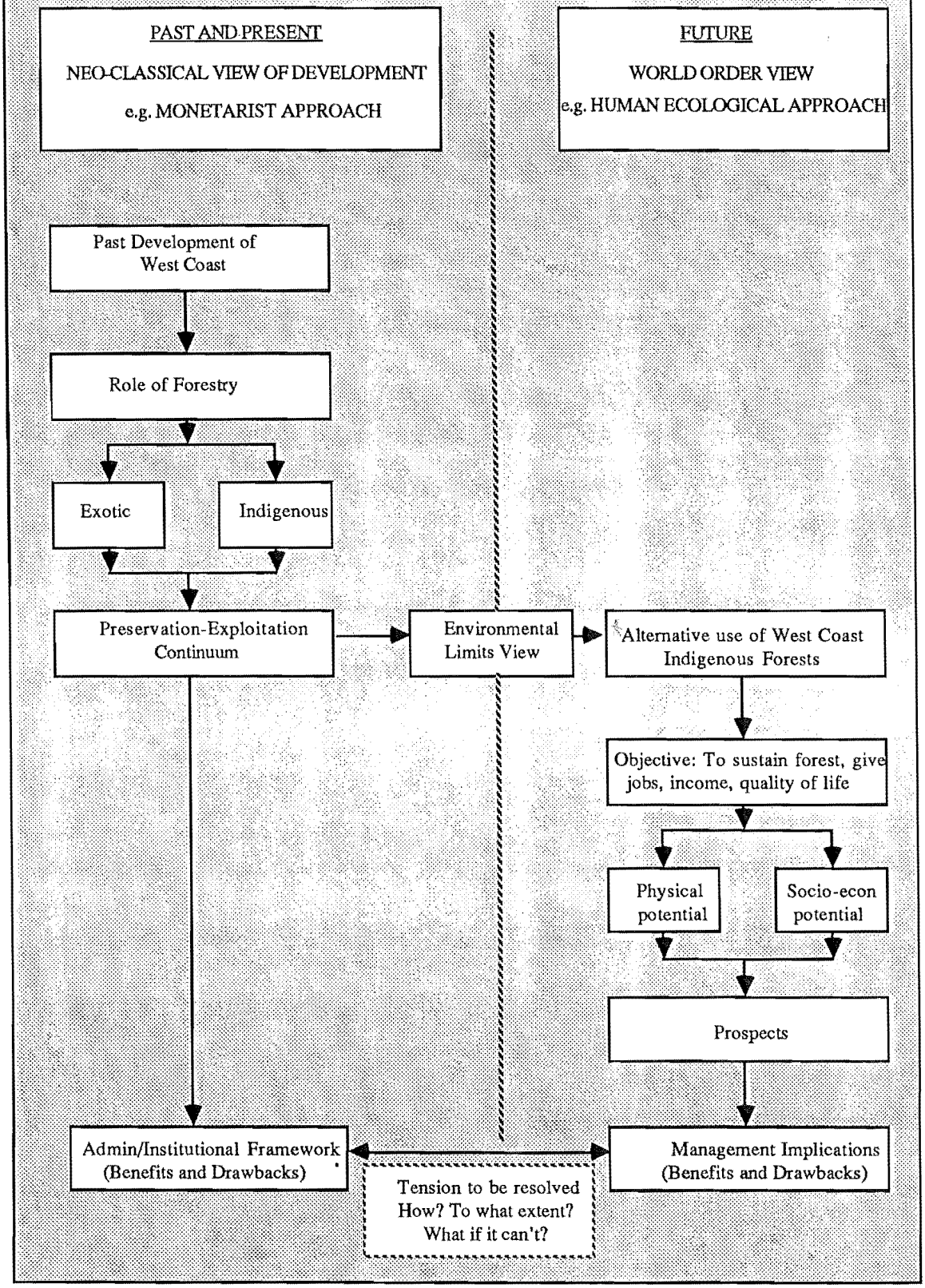
1 Dialog is an on-line computorised literature data system based in California. It holds references and abstracts from several data bases, such as Sociological Abstracts, CAB Abstracts, Environline and NTIS (National Technical Information Service). A search of the literature can be made using key words and phrases.

Figure 3.1: CONCEPTUAL FRAMEWORK



The study elements have not remained immutable during the course of the research. For instance, an original proposal to test the acceptance of the most promising alternative forest-based uses in a locality which seemed to offer good prospects was dropped from the research design as it would have been impracticable. The focus of the research shifted from end states to the processes involved in getting there.

Later on, during the course of the study another Dialog literature search was carried out on social/community forestry and various other data bases were manually searched for references on socio-environmental topics.

## 3.3 Considerations of Design.

### 3.3.1 Published information.

Published information on alternative forest-based activities on the West Coast was an obvious starting point for the research. After conducting a search of the literature, it soon became apparent that there had been no significant socio-economic studies of commercial alternative forest-based uses or users, apart from those of Stephens and Wells (1983) on the implications of creating a national park in the Paparoas and Houghton and Caskey (1985) on wood manufacturing. Denne's (1982) study of sphagnum moss was a comparative study with other land uses, whilst the research of edible forest mushrooms by Chu-chou (1984) was a feasibility study. Discussions with personnel at the West Coast United Council, the Department of Lands and Survey (DL&S), the NZFS and NFAC confirmed that this was the case. Much of the published research that had been conducted by the NZFS, Westland Conservancy and the Forest Research Institute on the West Coast, which touched on alternative forest-based activities, related to animal control, i.e. the concern was to determine the effect of browsing animals on the forest environment. For instance, the incidence and spread of possums had been studied, but only in catchments where these animals were a particular problem and almost entirely from a biological point of view. Comprehensive surveys of the whole of the West Coast were not carried out.

One obvious source of socio-economic data is the Census of Population and Dwellings conducted every five years, the last one being in 1986. At the inception of the research only 1981 figures were available, which made the information dated to begin with. Some provisional information from the 1986 Census was being released, but insufficient at that time to be of much use. A serious limitation of the 1981 Census and the subsequently available 1986 Census is that although they enumerated occupations, the definition of "main" occupation and the determination of full and part-time involvement gives a misleading result, leading to a likely undercounting of certain

seasonal occupations. As it was known from preliminary investigations that many forest-based activities were undertaken as a minor activity or source of income and that a very small proportion of the workforce were involved in them (West Coast United Council, 1984b), the Census can only be used as a guide to the significance of forest-based occupations.

Because the Census and the WCUC (1984b) study gave an incomplete picture of commercial users, it was difficult to determine the exact size of some user groups. This was particularly the case with possummers, deer trappers and shooters and moss harvesters, for it has been relatively easy to enter and leave these activities, as establishment costs are not high relative to other activities such as beekeeping. Many Coasters have dabbled in the former activities and the population is in constant flux.

### 3.3.2 Random Surveys and Anthropological Methods.

The fact that forest-based users comprised a very small, and indeterminate, proportion of the total population posed another problem which related to the level of precision required. A random sample of the total West Coast population would have been beyond the time and financial scope of the study and was hence rejected. A stratified random sample was also ruled out. Alternatively, the sample could have been contacted by mail. There are two major drawbacks to this approach, however. The first relates to non-response. Despite the results and strategies suggested by Graetz (1985) to achieve a high response rate, it was surmised that response to mailed enquires on the West Coast would be low. This was because it was hypothesised that many alternative forest-based users would be loners who partly undertook their activity to avoid such 'bureaucratic' intrusions in their lives. Furthermore, a Coaster and Editor of the Trapper Network Newsletter, a broadsheet produced by the New Zealand Possum Fur Producer's Association reported that it was extremely difficult to contact local members, who generally did not respond to letters and who were often away in the bush (Mercer, 1987). The second drawback of mail surveys is that there is no opportunity to probe answers. For these reasons a random mail survey was rejected too, though some mail enquires were not ruled out. However, one aspect of sample surveys is that they give the researcher the ability to generalise the results, a feature that was considered to be important for the research, as discussed below.

The desire to obtain an overview of alternative forest-based activities, in order to get a general idea of who participated in them and the state and potential of these activities, ruled out a social anthropological approach. This approach would have provided an in-

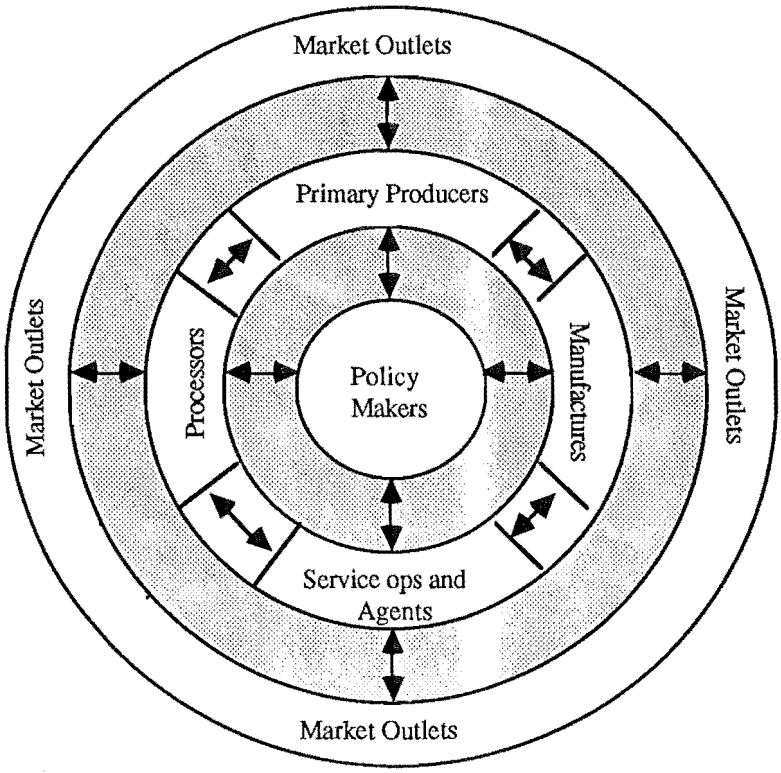
depth understanding of a few individuals and activities, but one could not hope to cover the entire West Coast or to extrapolate the results to the population at large.

## 3.4 The Research Design.

The first part of the study began with an historical review of forestry on the West Coast and the late emergence of other uses apart from timber production. Material for this review was mainly gleaned from published sources, particularly annual reports to Parliament by directors-general of the NZFS. Other information was gathered from informal interviews and discussions with individuals who were or had been involved with forestry on the West Coast. These included face-to-face informal interviews with all but one of the past directors-general of the NZFS, dating back to the period 1961-1971 and with the last director-general of the DL&S and also with an retired sawmiller and a resource manager. The latter had been directly involved both with attempts to manage Pureora State Forest (in the central North Island) and with podocarp forests on the West Coast. These free flowing interviews covered pre-conceived topics and issues wherever possible, in order to guide the discussion to items of specific interest. Accordingly, question wording varied from interview to interview. The responses were recorded on audio tape, transcribed verbatim and edited only to improve clarity. They form a permanent record of recollections of attempts at sustained-yield and multiple use management of indigenous forests in New Zealand and on the West Coast and of the decision-making process. Discussions were also held with resource managers in government departments, State Owned Enterprises and at the West Coast United Council. The ex-directors-general and resource managers can be conceived of as policy makers and are shown in the inner ring of Figure 3.2, overleaf. They provide a management framework for the realisation of commercial activities. They have thus been depicted as having a central role, which diminishes, however, as one moves outwards from the centre towards the market, where factors largely outside the control of New Zealand or West Coast decision-makers become more significant, e.g. trade policies by foreign governments and consumer demands.

The Waitangi Tribunal hearing of the Ngai Tahu claim on the Arahura Purchase and Mawhera leases was attended in Greymouth, between 30 November and 3 December, 1987. Thus an understanding of the historical use, sale and alienation of land and the loss of traditional Maori values was obtained and contact with key Maori spokespersons established.

Figure 3.2 Survey Contacts.




The analysis of the current situation of alternative forest-based users was based principally on interviews with those who derived an income from alternative forest-based activities on the West Coast. A questionnaire survey of self-employed residents of the West Coast directly engaged in forest-based activities was carried out. These formed the main group contacted. They were mainly primary resource users, but also included service operators and agents, processors and manufacturers, as shown in figure 3.2, above.

As mentioned above, a random survey had been ruled out as being impracticable. However, it was known that the former NZFS and the DL&S controlled almost all (93.5%) of the West Coast indigenous forest estate and that commercial forest-based users of this estate required a permit or licence. Hence, it was decided to target these, and the names of all licence holders for the 1986-87 year were obtained.from departmental records.

To be included in the survey, respondents had to be West Coast residents, self-employed and commercially active in a forest-based activity (other than timber

production) in or after the 1986-87 financial year. Those undertaking activities involving no financial transactions were excluded (e.g. hunting purely for home consumption). Initially, names of non-resident permit holders were also gathered but as they were located as far away as Central Otago, Nelson and even the North Island, time and resources prevented contact being made with this group. This principally affected the population of tourist operators. However, most of these fly or drive tourists to the West Coast for sight-seeing visits. As mentioned above, it had been decided to confine the study to those who derived a living from a direct association with indigenous forests. Hence, the study did not cover tourism in general. Thus, the tourism sector was limited to guides, defined as those who take parties of tourists through the forest either on foot, horse-back or vehicle. (In reality, it is often spurious to compartmentalise the various environmental elements which influence outdoor tourism. For instance, what is a rafting trip without the scenic backdrop of mountains and forest or other elements?).

Although contact names came principally from the NZFS and the DL&S, other names were obtained from the Ministry of Agriculture and Fisheries (MAF) for commercial beekeepers, the Sphagnum Moss Association, the Editor of the (possum) Trapper Network Newsletter, mentioned above, from published information on craft woodworkers and from the Yellow Pages of the telephone directory. Processing houses were also contacted to provide names of their suppliers, but this information was not forthcoming. To partially overcome any omissions from the above sources and to include those operating solely on private land, or those operating illegally without a licence or permit on public land, respondents and other informants were asked to verify the names on the contact list. This reputational method involves the identification of well-known individuals because of their standing amongst others in the community. The method has been used in other studies to analyse those with power but has been criticised because it assumes that power is socially structured, i.e. it is an elitist approach, as opposed to decision-making approach discussed in Chapter 2, above (Debnam, 1984). However, for the purpose of this study, the technique was useful as it produced a few extra names and confirmed that the survey list contained most of those who were locally known to be actively involved with alternative forest-based activities. It also revealed that some had moved from the Coast or were no longer active and that one person had died.

A long list of unverified contact names was initially compiled. Nevertheless, the longest list, that of possummers (possum hunters) was not very large (69) if one wanted to undertake statistical analyses. Other user groups appeared to be much smaller: deer trappers and shooters (45), craft woodworkers (9), beekeepers (21),

charcoal manufacturers (2), moss producers (40), nurserymen (4) and guides [tourism] (15, excluding non-resident operators). Furthermore, lists of names were not necessarily mutually exclusive of each other; membership overlapped, particularly amongst the possummers, deer trappers and moss producers. But, it was envisaged that field enquiries would only likely yield a few additions, as the initial contact lists were the result of extensive enquiry. There would more likely be drop-outs, through non availability or cessation of operations. Hence, it was decided to interview all those on the contact lists. Thus a census rather than a statistical sample was attempted.

In order to obtain the maximum possible response, it was decided to conduct face-to-face interviews using a set questionnaire. However, provision was also made to mail/drop questionnaires to those who could not be personally interviewed. A preliminary questionnaire was pre-circulated for comment to a few prominent forest-based users in December 1986 and a pilot survey conducted in July 1987 amongst ten prominent forest-based users. Amendments were made to the questionnaire where appropriate.

A press release was circulated to newspapers in Westport, Greymouth and Hokitika explaining the purpose of the survey that was about to begin (see Appendix 2). It appeared on the front page of the Greymouth Evening Star and the Westport News on 3 August 1987 (together with my photograph) and on page two of the Hokitika Guardian on the same day. The press release had the desired effect, as many respondents said that they were aware that the survey was in progress and were only too willing to be interviewed. Whilst the press release may have had an initial impact, news that a survey was taking place was also quickly passed by word of mouth, especially in rural areas.

What will here-after be referred to as the 'questionnaire survey' began in earnest on 5 August, terminating on 22 October, 1987. As mentioned above, attempts were made to interview all those on the contact list. Interviews were pre-arranged on the phone wherever possible, and, where necessary, at least three attempts were made to make contact. When no telephonic contact was possible or where prospective respondents were not located at their address, or otherwise missed, a questionnaire was mailed to or dropped at the listed address, accompanied with an explanatory letter. Entry into a draw for a $100 prize was offered to those who sent back a completed questionnaire. If this elicited no response, a follow-up letter and questionnaire was sent and attempts were made to contact people on the phone to remind them to return the questionnaire.

The questionnaire comprised open-ended and pre-coded questions (see Appendix 3). All questions which required opinions were deliberately left open-ended because of a desire not to force answers into categories, which would have meant a loss of detail. Pre-coding was mainly employed where rating scales were used and demographic details recorded. Categories were used for the latter measures, such as age and income. This entailed sacrificing some detail but this was deliberate as the questionnaire was formatted for multivariate analysis of the results and for ease of administration. Attempts were made to keep the questionnaire as short as possible, but, in the end, it contained 38 questions. Respondents did not necessarily have to answer every question, but 37% had to go through the procedure at least twice as they were involved in more than one forest-based activity (see below). The questionnaire took at least 20 minutes to administer, if only one activity was involved. On average, about one hour was spent with each respondent.

From the very beginning it was apparent that the target population was predominantly self-employed individuals. 116 interviews were conducted amongst this group and their responses were analysed separately. They formed what hereafter will be referred to as 'the questionnaire survey population'. Employees in general were deliberately excluded from the survey as many of the questions were market oriented, which, it was reasoned, could only be meaningly answered by proprietors or company managers.

Hence, the questionnaire survey refers to self-employed, commercial, alternative forest-based users. All respondents were asked what kind of forest-based activity or activities they were engaged in, and not just about the activity they were listed as undertaking. 63% of the sample was involved in just one commercial alternative forest-based use. A further 27% were involved in two activities, 9% in three and 1% in four activities.

Ten separate commercial forest-based activities were recorded and undertaken by the following number of people: beekeeping (19); charcoal manufacturing (1); craft woodworking (8); live deer capture (35); goat capture (5); moss picking and processing (36), possumming (47); nursery-keeping (3): guiding (10) and venison shooting (8). Responses for each of these were coded and formatted for computer analysis.

Twelve helicopter operators servicing this group were also contacted and asked similar questions to those interviewed in the questionnaire survey. In addition, two furriers, a buying agent and two company managers/directors were interviewed. They were not asked the demographic questions and their questionnaires were put aside for separate analysis. Furthermore, two beehive product exporters, three commodity traders/investors (one involved in deer farming and two in moss and possum exports)

and one game processor were interviewed. Their responses are not included in the results of the questionnaire survey, but have been used to verify and supplement information from the self-employed group.

Some of those interviewed in the questionnaire survey and most of those servicing this group, had direct contacts with markets. For instance, most of the woodworkers interviewed sold some of their wares through the Punakaiki and Hokitika craft cooperatives. This group, though not mutually exclusive of the other contacts, can be conceived of as the 'Market Outlets' shown in Figure 3.2 above. In reality, they are not the end of the chain, as the consumers of the products are. However, it was beyond the scope of the research to undertake a consumer survey too.

Industry information was supplemented by that published in professional journals, newspapers and trade magazines. The latter two were accessed through Newz Index, a monthly abstract of business and commercial publications, covering the major trade journals and newspapers in New Zealand.

In order to put the responses from these interviews into a regional, national and international context, extensive use was made of published material, such as production statistics. Export trends from 1981 onwards were obtained from the Department of Statistics' computer database through their Infos system.

Information from financial statements was also gathered from some of the self-employed group. This was undertaken as a separate task. In order to carry out financial analyses, data was gathered from selected respondents who took part in the questionnaire survey. It would have been an impossible task to have attempted to collect this data from all respondents as many did not keep accurate records. Other respondents were not interviewed at home or at their work-place and so did not have their records to hand.

Except in one case where some costs were estimated, data was obtained from statements prepared for tax purposes for the three year period 1984/85-1986/87. Understandingly, this information was given in confidence, so a detailed break-down of the information is not presented here, lest the identity of respondents be deduced. Bearing in mind the sensitivity of the data, it was gratifying that so many respondents co-operated in providing information.

In total the records of 10 beekeepers were examined, but one set was discarded as it was incomplete. Four moss producers provided data. For comparative purposes they were split into two distinct groups, comprising two individual producers who air-dried their moss and two factory owners who kiln-dried moss. Six possummers supplied financial

data but it was only possible to use four of them as the other two included other activity costs which could not be separated out satisfactorily. Even so, only one respondent was able to supply data for all three years. Two woodworkers supplied detailed financial data for the period 1985/86-1986/87, whilst two others declined to do so. One respondent had temporarily ceased operations whilst another had been operating in New Zealand for less than a full financial year. One woodworker was part of the mailed survey and did not provide financial data, whilst the remaining woodworker ran a craft shop making it impossible to provide separate information for wooden craft work.

No attempt was made to gather financial information from deer trappers, venison shooters or guides. The first two groups were mostly involved in several alternative forest-based activities on a very minor scale, making it impossible to gather accurate information. Many of the guides were relative new-comers to the activity and did not have representative data. The one guide who ran a large, professional operation in Franz Josef was involved in several tourism activities, including running a restaurant/shop, so it was impossible to obtain information on his forest-based operation.

Financial statements had been prepared for tax purposes by respondents' accountants. As a number of different firms were involved, it was found that different conventions were followed. Thus, for comparative purposes it was necessary to standardise the data. All data was transformed into 1987 dollar values using price indices for 1985-1987, supplied by the Department of Statistics, Christchurch.

The All Farming Inputs and Outputs Price Indices were used to adjust the data obtained from beekeepers, moss producers and possummers, and the Wood and Wood Products Input and Output Indices used for craft woodworkers. The Prevailing Weekly Wage Rate Index, Occupation Group 6 (Agriculture, Forestry, Fishing and Hunting, private sector) was used to adjust wages where these were paid. Indices for Farm Buildings, Commercial Vehicles and Other Agricultural machinery and Equipment were used to adjust the value of assets. Contact was made with the Valuation Department, Hokitika, to ascertain the movement in land prices.

Quite a considerable variation was found in the accounting for the Goods and Service Tax, which was introduced in October 1986. Some statements were GST inclusive, others exclusive. An adjustment was made to ensure that all records were GST exclusive. The only other problem was the treatment of inventories. Moss bought by one factory was included in inventories, whilst in the case of the other factory it was included in expenses. Similarly, some beekeepers included feed (sugar) and honey

bought in for processing in inventories, others in expenses. In all these cases, the items were treated as expenses.

Considerable trouble was taken to ensure that the financial records were as accurate as possible. Nevertheless, the results should be interpreted with care, bearing in mind that the data was originally prepared for tax purposes. They may thus overstate expenses and understate monetary returns, though close questioning of respondents ensured that obvious anomalies were corrected.

## 3.5 1986 Census compared with Questionnaire Survey

Although it was noted that the Census of Population and Dwellings was limited for our purposes, a special computer analysis was commissioned to compare the results of the Census and questionnaire survey. The two were matched as closely as possible in terms of self-employed occupation in the alternative forest-based activities covered in the West Coast study.

In total, the 1986 Census recorded 105 self-employed people engaged in alternative forest-based activities (compared with the 116 respondents included in the questionnaire survey, which excluded the 12 helicopter operators). The Census figure was derived from the question: "What is your present occupation?" However, the Census guide given out to every household (Department of Statistics, 1986) introduced an ambiguity in its explanation to this question. With respect to 'present occupation' it stated, *inter alia*:

> *If you have more than one job, business or professional practice, write down what you do in your main job.*

Note that this is not a definition of present occupation. It is not necessarily the same as "main job", which was not explained, but which can be interpreted in two ways, as was discovered in the questionnaire survey. The first interpretation relates to time involvement in an activity. On this basis the Census divides the population into full-timers and part-timers; the latter working less than 30 hours per week. However, this is not an average figure of hours worked over the year, but only for the week prior to the Census, which took place on Tuesday 4 March 1986. The question asked was:

> *How many hours did you work last week?*

The explanation stated:

> *If on holiday, sick or absent for other reasons, state usual hours.* (space) *Hours worked last week in main job* ***and*** (space) *Hours worked last week in other jobs (if nil hours write '0')*

The result is shown below:

Table 3.1 Census Employment in Alternative Forest-based Activities.

| | Full-time | Part-time | Total |
|---|---|---|---|
| Number | 84 | 21 | 105 |
| | % | % | % |
| Percent | 80 | 20 | 100 |

Source: Department of Statistics. Special analysis of West Coast alternative forest-based users, 1986 Census of Population and Dwellings, August 1988.

The problem with this Census result is that it leads to an under-statement of seasonal occupations, such as venison shooting and deer trapping (peak months March/April), possumming (peaking in July/August), and guiding (peaking in March). The second interpretation of "main occupation" can be based on income reliance. This was not provided for in the Census.

On the other hand, in the questionnaire survey two measures were employed. Firstly, a question as close to the original Census question was asked, viz: "Is your forest-based activity your main occupation?". No explanation of the question was offered to respondents. Later, after a question on income, it was asked: "What is the income reliance for all forest-based activities?" and "What percentage of the above income came from your forest-based activity/activities?". The income reliance for each activity was recorded. It was found that 50% of the 116 respondents relied on their forest-based activity for 50% or more of their income, whilst 59% stated that it was their main occupation.

The differences in number of respondents involved in forest-based activities enumerated by the Census and the questionnaire survey can partly be attributed to the fact that two time periods were involved, 1986 and 1987. Between these years, all alternative forest-based activities, except moss harvesting and processing, suffered deteriorating market conditions. Thus, one would have expected that numbers of those involved would have dropped. This, then, does not explain why more respondents were found in the questionnaire survey. The answer must therefore lie in the definition of main occupation and the research design and method of contact.

The low number of those undertaking alternative forest-based activities enumerated by the Census did confirm that these activities are undertaken commercially by a very small minority of the population. They represented 3.7% of the total self-employed population of the West Coast, 15 years of age and over, and only 0.7% of the total West Coast population, 15 years and over, who were gainfully employed in 1986.

Bearing in mind the differences between the Census and the questionnaire survey, it is difficult to compare the number of people in the different activity groups. It is important to note that the Census enumerated all individuals, whereas most of those covered by the questionnaire survey were those with licences or concessions to use public indigenous forests.

## 3.6 Survey Returns.

As explained above considerable effort was made to try and contact all those people on the contact list and additional people suggested by people in the field. Some people were inevitably missed as field-work time was limited and some areas could not be revisited because of their remoteness. As it was, 9,600 km were travelled administering the questionnaire survey and an additional 2,400 km in setting-up, refining and administering the pilot survey.

Initially, 205 names were on the contact lists. The following table gives a breakdown of discarded contacts in the face-to-face survey:

Table 3.2 Discarded Contacts.

| Reason | number |
|---|---|
| No longer active | 17 |
| Moved out of region | 4 |
| Hobbyist | 3 |
| No contact after two personal calls | 2 |
| Failed to find | 14 |
| Unknown address | 5 |
| Unknown in district | 1 |
| Refused | 2 |
| Total | 48 |

Only two people refused to take part in the survey. One was a craft woodworker who had been previously sampled by Houghton and Caskey (1985) but who claimed that the information he gave was not kept confidential, since his income level could be deduced from the published results. This in fact was spurious, but he nevertheless refused to take part in another survey. The other refusal came from a moss harvester who was suspicious that the survey was an attempt to gain access to his moss (he had previously been harassed by people trying to steal it!).

It was particularly gratifying to get so much cooperation from those people contacted. They were only too willing to participate. Many expressed satisfaction that someone was looking at employment opportunities, when it was apparent that Government measures and environmentalist pressures were reducing short term employment prospects.

As mentioned above, as a last resort, questionnaires were left or sent to addresses where no face-to face contact was possible. The table below details the results:

Table 3.3 Mail Questionnaire Contacts.

| | |
|---|---|
| Questionnaires sent/delivered | 23 |
| Questionnaires returned | 7 |
| Reason for non-return | |
| Failed to respond after at least one follow-up letter | 12 |
| No longer active | 3 |
| Deceased | 1 |

Discarding the last two non-return categories, the effective response rate was 37% ($^{7}/_{19}$). This was consistent with what was earlier expected. Considerable effort was made to obtain responses and wherever possible these prospective respondents were spoken to on the telephone. (The questionnaire was too long and complicated to be administered by phone).

## 3.7 Public Participation and Feed-back.

The questionnaire survey involved more than questions and answers. The exercise was in fact interactive and it was possible to appreciate the forest-based problems of respondents and to answer their queries. Respondents sought information about DOC policies and intentions and were generally very co-operative about their activities. Extensive discussions were also held with resource managers at the NZFS and the DL&S and subsequently with DOC, Land Corporation (Landcorp) and Timberlands (Forestry Corporation) staff on the West Coast.

Part of the study was funded by the Department of Trade and Industry (DTI), now the Ministry of Commerce, which required that a report on the commercial and technical feasibility of alternative forest-based activities be furnished in August 1988. This 28 page document was presented to the West Coast Regional Development Council (WCRDC) on 3 November 1988 in Greymouth. (They were the body established to promote regional development on the Coast and they screened and recommended projects for the DTI funding). As the WCRDC comprised councillors from local and regional authorities and the Department of Conservation (DOC), this presentation ensured that preliminary results were made widely available to regional decision-makers. Furthermore, the report (Tilling, 1988b) was available for public scrutiny at the office of the DTI in Christchurch or through the WCRDC in Greymouth. The findings were subsequently publicised by the WCRDC in local West Coast newspapers in September 1989.

A presentation was also made to the West Coast Beekeepers Association on 1 November, 1988, in Greymouth and a public meeting was called by the Sphagnum Moss Association at the Highway Tavern, Hokitika on 2 November, 1988 to discuss the preliminary results of the study.

These meetings were not only an opportunity to impart results but invaluable for feed-back on some of the concepts and on the preliminary conclusions, confirming the trends in the forest-based activities

## 3.8 Summary.

Considering the nature of the problem to be analysed, and the desire to obtain an overview of forest-based users, the approach taken was the only sensible one to follow. Forest-based users have been put in a regional, national, and international context. Plausible conclusions have been reached by comparing NZFS policy statements, published and interview data with theory and known outcomes. This process is known as triangulation (Hill, 1984).

# CHAPTER 4. MULTIPLE-USE MANAGEMENT- INTENTIONS AND OUTCOMES.[1]

## 4.1 Introduction.

Multiple-use forestry has been officially regarded as the essence of New Zealand State forestry for nearly half a century. However, the underlying reason for adopting the multiple–use concept as a central pillar of State forest management was never clearly spelt-out. Misconceptions crept in, especially the idea that timber production was an essential component of forestry and that national parks were gazetted for 'single-use'. Hence, resources in national parks and reserves were regarded as being "locked–up" by those, such as sawmillers and miners, with a consumptive development ethic. This view is clearly false, as it does not acknowledge that these functional arrangements express particular, legitimate societal values and where, never-the-less, multiple–use management principles have and will continue to have a role. These biases are still prevalent today and are contributory reasons for the confrontation between two groups, (for convenience labeled 'foresters' and 'environmentalists') over the use of lowland podocarp forests on the West Coast.[2] The timber ethic antagonised and alienated environmentalists and led to a polarisation of positions, contributing to the demise of the NZFS and the transfer of most of the indigenous forests on the West Coast to DOC. The pendulum has swung towards the non-consumptive lobby. Now the management of almost all forests on the West Coast is subject to the strictures of the Conservation Act, 1987,. which has a preservationist bias. This has profound implications for the realisation of the commercial potential of many alternative forest-based activities and does not resolve the problem of setting priorities between competing uses. This will remain a socio–political process and not merely a technocratic/professional exercise.

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1 This chapter incorporates and expands a paper given at the New Zealand Institute of Foresters Conference in Greymouth in May 1987 (Tilling, 1988c).

2 Whilst Froude *et al* (1985) base their definition of 'lowland' and 'upland' on Kirkland and Trotman (1974) the later state that the distinction was arbitrarily defined. For them, 'lowlands' are those forests below 910m a.s.l. north of the Manawatu gorge; below 760m a.s.l. in the rest of the North Island, Nelson, Marlborough and Westland north of the Arnold River; and below 610m a.s.l. for the rest of the South Island. On the other hand, Nicholls (1983), acknowledging that the upper and lower limit of no one forest type or even forest class can demarcate lowland from highland forest throughout New Zealand, nevertheless suggests that if one single tree species is sought, only rimu (*Dacrydium cupressinum*) appears to have the necessary attributes. Using this species, he distinguishes four distinct lowland forest regions, [the upper limits of which, in fact, closely correspond to those of Kirkland and Trotman (1974)], i.e. Northern Lowland, from the northern tip of the North Island to about the 39th parallel, with an upper limit of 900m a.s.l.; Central A Lowland, comprising the remainder of the North Island and the northern extremities of the South Island (Marlborough Sounds and Takaka-Collingwood districts) with an upper limit of rimu at about 600m a.s.l., and 750m a.s.l. at the most; Central B Lowland comprising the northern third of the South Island to the Taramakau River on the West Coast and a small area on the east coast, except Marlborough Sounds, down to Banks Peninsula with an upper altitudinal limit of 600m a.s.l., but sometimes a little higher; and finally the Southern Lowland region,

## 4.2 Background to Multiple-Use in New Zealand.

As noted in Chapter 1 above, forests play a central role in the earth's bio-physical processes, which sustain all life on this planet. They provide habitat for wildlife in their own right and have a water and soil conservation function too. For eons they have provided products useful to man. They were a source of food, fuel and medicinal products, as well as timber, but because they were abundant and apparently indestructible there was a slow appreciation of the need to conserve them. By the time of the Romans large areas of the Mediterranean region had been deforested. Pockets of deciduous forest were also cleared during this period in Central Europe, as brown forest soils were better suited to arable farming than the podsols of coniferous forests. Nevertheless, large individual trees and dense groves of fine trees were held in awe and in spiritual and religious reverence, probably leading to the first ideas of preservation. By the Early to High Middle Ages forests were formally recognised for their hunting, fishing and forest products in France and as royal and other parks for the management of game for the nobility in England (Osmaston, 1968).

In England most were Crown or Royal forest. Some were alienated for the king's subjects and common rights were granted to take certain products and for grazing. However, protective laws were gradually relaxed as the population increased, more land was cultivated and as the wool trade prospered (Osmaston, 1968). As in other parts of Europe, forests were razed, principally by fire. By the fourteenth century much of the present landscape of Western Europe was recognisable (Houston, 1963). The farmlands thus created were in lowland areas. Elsewhere, marshes, areas of broken relief, higher altitude and poorer soils remained forested, with the exception of highland grasslands.

This is not to deny early attempts to develop forest management, such as those of the French dating from the 9th century, which became more sophisticated in the 14th and 16th centuries and especially so with the controls of Colbert in the mid 17th century, some of which still survive today. German foresters were active too. In the 18th century they developed more advanced sustained-yield techniques, based amongst other things on volume yields and successive fellings for the natural regeneration of uniform, even-aged stands (Osmaston, 1968). The concern may not have been merely to balance harvest with growth and to regulate the use and enjoyment of forest products. It has been hypothesised that sustained-yield might have developed as an instrument for ordering social and economic conditions and been initiated to produce multiple benefits

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covering the remainder of the South Island, up to 600m a.s.l. in Westland, below 450m a.s.l. in Fiordland and below 300m a.s.l. in Stewart Island.

too (Lee, 1983). One other important point needs to be borne in mind: right up until the nineteenth century, industrial activity remained decentralised and small in scale and overland transport and access to resources remained difficult, so that a high degree of local self-sufficiency was necessary.

The Industrial Revolution brought an intensification and acceleration of development. Industry became agglomerated and supported by large urban centres where mass markets evolved. Raw materials were obtained from distant lands, where resources such as those derived from forests, were seemingly inexhaustible. Not surprisingly, the forestry concepts of the 17th early 18th century Europeans were "overlooked" (Australian Department of Agriculture, 1975).

This neglect initially occurred in New Zealand too. Later, multiple-use and sustained-yield, nurtured by a necessity to conserve resources, became interlinked and the catch-cry of New Zealand forestry. This is understandable as the rapid destruction of forests was reducing options on their use and productivity.

However, a number of events and changes in technology from the beginning of the Industrial Revolution till today affected the interpretation and implementation of the multiple-use and sustained yield concepts. These historical factors are briefly examined as they suggest a partial explanation for the rift between "conservation" and "development"[3], the allocation of significant areas of lowland forests to reserves, particularly on the West Coast and the ultimate demise of the Forest Service.

## 4.3 Traditional Maori Values.

It can be demonstrated that alternative forest-based economic values have been very significant in the past, but have since been largely denied by government policies or neglected by the quest for more immediate, tangible and seemingly greater financial returns. The superseding of the traditional Maori use of West Coast forests is an example of this process.

Approximately 1000 years ago 78% or 20.95 million ha. of New Zealand was covered by forest (Froude *et al*, 1985). About 6.95 million ha.was destroyed by Maori inhabitants over a period of nearly 900 years before European settlement in 1840 (Wendelken and Hannan, 1974). Forests were cleared principally by the use of fire and it is suggested by McGlone (1983) that those that were conserved were retained mainly

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3 The phrase 'conservation and development' is a misnomer, as conservation usually means 'wise use and management'. However, conservation is often equated with preservation, causing confusion. In this thesis, conservation refers to 'wise use and management' unless indicated otherwise, in quotation marks, to identify it with the World Conservation Strategy (IUCN, 1980) and New Zealand Conservation Strategy (Nature Conservation Council, 1981).

because there was no 'superior economic use' to which they could be put. This may be an extreme explanation for the retention of forests, as the Maori had no great need to destroy them all.

The Maori of pre-contact times had a significant economic reliance on forest products, but these were not reduced to financial variables, as the Maori did not have a formal monetary economy as we know it today. Nevertheless, Best (1942) records that:

> *The old time Maori was want to speak of his two 'food-baskets', namely the forest and the sea. They were the principal sources of his food supplies, in as much as, in many districts his cultivated foods, taro and sweet potato, were not produced in sufficient quantities to form a very important part of his food-supply. He spoke of Papa, old Terra Mater, as the mother of mankind, and as providing food for her children; a large proportion of that food was procured from the forest.*

Apart from birds and other animals, the Maori obtained a considerable amount of food, oils and gums from the bush. These are detailed by Best (1942) and require no elaboration here. Trees and shrubs had many medicinal properties too. For instance, the juice of flax (*Phormium tenax*) roots and thick ends of leaves, when taken in large doses was used as an emetic; in small doses, taken daily, it was used for boils. An extract was used as a purgative and the gum used for dressing open wounds (Kensington, 1909). As one would expect of a resource of such central value, the bush had considerable spiritual importance, or tapu (Best, 1942). All forms of life were said to be descended from the god Tane and he was thought to be present within plants, birds, insects and men. As birds and trees were related to humans, they could not be harvested without elaborate ritual to remove Tane's tapu (Orbell, 1985). We need not dwell on detail here, but note that as forests provided a wide and fundamental range of products and values to the Maori, these would presumably not have been forsaken lightly. (By way of contrast, the Pakeha predominantly viewed these forests as a barrier to agriculture, hence burning and wasting them, or as a mere source of timber).

It had previously been thought that the West Coast had a sparse Maori population, for, when Thomas Brunner visited Westland between 1847-48, he reportedly found only 97 Maori between Karamea and Paringa, a distance of 350 km (McCaskill, 1954). However, recent archaeological evidence gathered by Ray Hooker suggests that there was a sizeable Maori population in South Westland dating back to 1200 A.D. (*Greymouth Evening Star*, August 8, 1987). Furthermore, archaeological records indicate that there were some six favourable economic zones of early Maori significance scattered throughout the West Coast: Heaphy-Karamea; Barrytown-Awatiri; Mawhera-Hokitika; Whanganui-Okarito; Karangarua-Paringa and Haast-Piopiotahi (Hooker, 1988). The most favoured sites and places of preferred settlement and occupation were

along the coastal fringe, especially at sites where marine resources and those of lagoons and swamps could be harvested. Seasonal inland food gathering was also important, though the nature of the country makes archaeological evidence difficult to obtain. Semi-permanent sites have however been discovered around Lake Brunner and at Kokatahi, inland from Hokitika, in the Mawhera-Hokitika zone (Hooker, 1988).

The pre-contact Maori way of life began to change under the influence of the Pakehas. It is not unreasonable to assume that, had the Maori continued to prosper commercially, their traditional forest-based activities would have changed too. Economies are not static. Nevertheless, the decline of traditional Maori values was accelerated by the loss of land.

The Maori view of the land is expressed in many proverbial sayings, one of which is: *Te whenua te wai u mo nga tamariki* -land is the nourishment of the next generation (Parore, 1985). Kelly Wilson, a kaumatua (elder) from South Westland commenting on the importance of land, says:

> *To return to the Maori culture, it might be said that the highest value is mana, a word incapable of precise translation into English, but a concept that includes self respect, status, prestige and standing - but essentially self respect. If a Maori loses his mana, he loses his self respect, the greatest loss of all. The things that go to make up mana are many sided, but one feature that is bound up with the concept is land. The importance of land to the Maori is enormous, not only for its own sake as a European might value it, but because of the link between the Maori and his ancestors. He "keeps warm" the place where his tupuna walked. His right to stand on that land is part of his mana for there on that spot is his turangawaewae. Maori culture has always prized the land: again I emphasise the Maori and his land is culturally powerful and emotionally vital* (Wilson, 1987).

But, practically all the land on which the Maori placed such significance was lost: bought by James Mackay, a government agent, for £300 on 21 May, 1860. Known as the Arahura Purchase, this "block" covered about 3,000,000 ha, extending from Kahurangi, north of Karamea to Piopiotahi (Milford Sound), from the Main Divide, along the Southern Alps, to the sea. The Maori wanted to retain the 80,000 ha between the Mawhera (Grey) and Hokitika rivers, but were persuaded to accept 202 ha at the mouth of the river (the Mawhera Reserve, now Greymouth) and 202 ha up river, 809 ha on the Arahura river, the main source of greenstone, with the right to buy back additional land up to Mt. Tuhua, the source of the river, if the 809 ha did not extend that far and another 3,500 ha elsewhere in the Arahura Block, including 202 ha on the Mawhera (Evison, 1987; McAloon, 1987). Later, additional land was added to these reserves.

However, this agreement has never been completely fulfilled by the Crown and has been a source of dispute ever since.[4] The matter is now being considered by the Waitangi Tribunal.

The Native Reserves Act, 1856, placed Maori reserves under the sole control of Government Commissioners, who were empowered to lease out the land. Subsequently, the Maori were persuaded to subdivide their large reserves into individual holdings, supposedly for their own benefit. The Attorney-General was to later explain that the Government's purpose was to bring more land on to the market and to break down the communal land system (Evison, 1988). In 1882 Maori Reserves were transferred to the Public Trustee, who was not required even to consult with the owners. Growing pressure from Pakeha settlers to buy the land outright prompted the Government to introduce the Westland and Nelson Native Reserves Act, 1887. This recognised nominal Ngai Tahu ownership of the reserve lands on the Coast, but imposed leases on 21 year terms, renewable in perpetuity. Not only was the land effectively alienated by this device, but also rents were set only once every 21 years fixed, by statute, on a percentage value of the land. These rentals have not keep pace with inflation, especially in recent years.

Even before most of these regressive measures came into effect, the Maori had become impoverished. In 1874, Mackay reported that the Ngai Tahu "lead a life of misery and semi-starvation" (Evison, 1987). Many of the old traditions and economic dependence on the forest rapidly declined. Thus the Ngai Tahu claim:

> *the issues in the Arahura Block are loss of land and loss of culture. The purchase left them without proper access to greenstone, a vital part of their culture. The effective loss of the Mawhera Reserve drove the people of that area south to Arahura, where there was not sufficient land for all those who wished to live there. The other reserves on the Coast were also insufficient and so many West Coast Ngai Tahu had to leave the Coast. Deprived of their land base, the people also lost the chance to remain as a strong group that could fully preserve their cultural values* (McAloon, 1987).

The basis of Maori life had been shattered and, with it, their economic dependence on the forest. Now they had to adapt to the ways of modern society the best they could. This was not easy as they had a depleted capital base and little effective say in the management of their meagre resources. Reserves were transferred to the Native Trustee in 1920, later to become the Maori Trustee in the Department of Maori Affairs. Although the administration of some land was vested in other government agencies, they were nevertheless answerable to the Trustee. He was not obliged to consult the people

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4 For a detailed discussion of land that was never allocated or alienated and for other alleged breaches of the Treaty of Waitangi see McAloon (1987).

and as the people were beneficiaries only, they could not use the land as collateral to raise loans for other developments (Mason, 1987).

Being timber clad, the 1000 acre Mawheranui Reserve was declared a Maori Forest in 1922, under the administration of the Commissioner of State Forests. In 1949, the Conservator of Forests, Westland, began to consider the wholesale milling of timber from the reserve. A dispute arose over the competence and intentions of a proposed miller, but notwithstanding, the whole reserve was logged. Only when reforestation leases were being considered in 1971 did the Trustee note that the owners should be put in the picture (McAloon, 1987).

Timber was one asset that was in demand before and after World War Two, so the temptation to exploit the indigenous forest must have been great, especially to those who were living in poverty, namely the Maori. The following example illustrates this point and shows that the Maori took on the Pakeha utilitarian, consumptive, development ethic. However, the people had little say in the exploitation of these assets: it was the bureaucrats in the Department of Maori Affairs and the NZFS who had the final say. Since other commercial opportunities were not obvious, deforestation was an attractive proposition. The Maori owners wished to sell the timber on Block 30, Arahura Maori Reserve and called a meeting in 1953 to decide whether the proceeds should pay for a meeting house at Arahura. As the voting in favour was 49,493 (based on shares, not people) against 47,512, the Maori Trustee decided against making the proceeds available for the meeting house. Time passed. In 1957, the Arahura Tribal Committee was informed the 1953 meeting was illegal. The Minister of Maori Affairs was called on to intervene in 1958. The timber was milled between 1959-60 and £3413-6-2d net was realised. The distribution of this sum continued to cause problems, with some of the beneficial owners rescinding their original agreement to pay their share to the Arahura Tribal Committee. The District Officer, Department of Maori Affairs, finally ordered:

> *the authorities to pay shares of timber money to Tribal Committee are not to be acted on. Distribute all moneys to the entitlers* [i.e the Maori beneficiaries] (Department of Maori Affairs, 1957-61).

The meeting house was never built.

The people had became pawns in a larger game over which they had no control. Their culture had been decimated: traditional uses had long since declined. What we see is an irreconcilable conflict between, on the one hand, traditional communal values epitomised by the desire to donate the proceeds of timber sales to build a meeting house and individual, materialistic values on the other hand. Some of the Maori had learned from the Pakeha to take what they could get. This is not just a New Zealand phenomenon. It

is a universal truth that, when people are desperate, they destroy their most cherished assets. Whilst we can lament world-wide deforestation, we cannot condemn the people who carry it out unless we can present viable alternatives.

## 4.4 Denial of Access to Indigenous Forests.

Pakeha influence was decisive, accentuating and speeding up the destruction of the forests. In Europe, there had been an intensification of change over many centuries, though, as noted above, much of the present landscape was recognisable by the 14th century. In contrast, most of the destruction of New Zealand's indigenous forests is recent. Finding an estimated 14 million ha. of forest in New Zealand in 1840 [52% of the land area] (Wendelken and Hannan, 1974), European settlers and Maori alike actively cleared the land. Between 1840 and 1983 approximately 7.8 million ha was cleared, representing 53% of the total forest cleared since the arrival of humans in New Zealand about 1000 years ago. Almost all of these cleared forests comprised lowland podocarp/hardwoods, [including beech] (Froude *et al* ,1985).

In the Pakeha world of New Zealand individual ownership of land and resources was and remains a dominant goal as it has become the source of wealth and prestige. It led to the confiscation and alienation of Maori land by the European settlers, the development of farms and the exploitation of minerals. Land has become a commodity to be invested in, traded in and speculated with. Nevertheless, individual land ownership is not absolutely necessary for the derivation of material or spiritual values. Much of the land that was bought by the Crown on the West Coast was not an immediately realisable economic asset, as it was mountainous and/or inaccessible. However, the Crown wished to exercise its control over the whole of the West Coast: to be the arbiter, rather than the Maori, over who should derive a benefit from this resource. When it saw that the public interest was threatened by excessive deforestation, it set up the Forest Service to eke out supplies of timber (in 'production' forests), conserve hill and high country forests for water and soil conservation purposes (in 'protection' forests) and established national parks and reserves under the DL&S to preserve intrinsic flora and fauna values.

These forests became public property, but access to and within them was strictly controlled. In 'production' forests it was denied by a deliberate policy to exclude people from them. This arose from the enforcement of fire control measures. Steam engines used in harvesting operations were a constant fire hazard. So were people on the periphery of forests, who were:

> *prone to throw matches around.....to burn off a bit more land to put their stock on. And we've had farmers do this on land we've bought, so* (we) *built up a very strong fire service to control the situation. Up until the change in the Act, the attitude was: 'keep people out of your forest'* (Poole, 1989a).

It was only in Poole's time as Direct-General (1961-71) that the NZFS felt that the fire control measures were strong enough to allow public access in the forests. 'Production' forests were to be protected from the action of individuals, to secure their commercial timber value. In all forests the flora was being destroyed by noxious animals, but it was only when these animals got out of control that the NZFS called on the help of hunters. Thus noxious animal control, combined with pressure from deer hunters, was a contributing factor which led to the opening of forests and the eventual change of the Noxious Animals Act to the Wild Animals Act in 1977 (Poole, 1989a).

This policy of excluding people from forests (except for commercial loggers) can still be found in Third World countries, such as India and Sri Lanka. Such policies have been found to antagonise the local people, who have continued to use the forests, principally as a source of firewood. The forestry services have thus become policemen; the people, common criminals. As such measures have not been successful in arresting deforestation a more cooperative approach, social forestry, has often become necessary.

## 4.5 Development Loans and Subsidies.

90% of the indigenous forests had been burnt and less than 10% used for timber production (NZFS, 1959). This was because agriculture was the dominant pre-occupation, not forestry. Thus, even though, by 1874 (the first Forest Act), there was growing concern for the conservation of native forests (Wendelken and Hannan, 1974), this was overshadowed by continued pressures, legislative measures and incentives to settle (i.e. clear) the land, so that today only about 6 million ha (23%) of the country now remains in native forest.

Land settlement policies and practices thus provide an example of the conflicting policies forestry had to contend with. These policies were the responsibility of the DL&S, which was separate from the NZFS. The DL&S itself was responsible for servicing the Land Settlement Board (LSB), whose function was to settle people on farms, by breaking-in land.

The Coast had for many years been regarded as a depressed region by successive governments, meriting selective assistance "to encourage the full utilisation of resources". Along with other peripheral regions, outside the Wellington-Rotorua-Auckland axis and Canterbury-Nelson, it was a designated 'priority region', where suspensory loans were available on the capital cost of plant, equipment and buildings to

stimulate investment and economic growth (Department of Trade and Industry, 1985). (The WCRDC advised the Government and recommended projects for approval under this scheme).

The last Director-General of the DL&S (1980-1986), Bing Lucas, said of the special position of the West Coast:

> *Now as far as the West Coast was concerned, if we'd operated there on a break-even point, we would never have settled* (people on the land). *The costs of development were so relatively high and the market value at the end of the line so significantly lower than elsewhere in the country, so ..... the economics were never very exciting* (Lucas, 1989).
>
> The West Coast *was regarded as a special case and successive governments didn't demand the same cost-benefit* (analysis), *to the same stringency, as they did in other parts of the country. Now Butlers* (Block) *was bad. Others were not so bad. Ahaura farm settlement wasn't too bad, but right through the Coast that general principal applied* (Lucas, 1989).

Butlers Block near Hokitika was a failed farm, partly covered in native bush and pakihi, which was assessed by the LSB in the 1950's. The Board decided against taking it over because it assessed it to be an uneconomic proposition. Fletcher Holdings Ltd. subsequently bought the block:

> *partly I assume to get some benefit from the forest but also to benefit from the incentives for land development that government had introduced generally. And obviously, Fletchers saw themselves getting the benefit of land development/encouragement loan* [5]*type opportunities, plus being able to feed timber through their mills and end up with an economically attractive pasture/product. Well, it didn't work out because they* (Fletchers) *found the economics didn't work either. So it was interesting in the era when Duncan McIntyre* (National Party) *was Minister of Lands, it would have been the early 1970's, we were again offered Butlers Block by Fletchers. The LSB looked at the* (Lands and Survey) *Department's sums, and it didn't work out. Duncan McIntyre made a special trip across to the LSB to press the Board to buy.....and the result was that Butlers was purchased. And when the economic squeeze started coming on in the most recent National government* (1981-1984) *John Falloon, Associate Minister of Finance, I think he was, was chairing the Cabinet Committee on expenditure. One of the blocks we were really hammered on was Butlers because it wasn't working out.*
>
> *We were called into account as to why we'd let ourselves get involved in an uneconomic proposition like Butlers. So fortunately, I had a long memory and went back to the days when our arms had been twisted by Duncan McIntyre, who at that stage.....was Deputy Prime Minister. So nothing happened, and we continued in Butlers* (Lucas, 1989).

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5 These suspensory loans were available nationally for the development of land and resulted in marginal hill country being cleared and farmed. Their viability depended to a great extent on the application of subsidised fertilisers and support prices on sheep, so that when, subsequently, the Labour Government removed the subsidy on superphosphate, and on SMP's (supplementary minimum prices), many of these marginal farms became uneconomic and run-down , reverting in parts to weeds.

Companies like Fletchers, with wide and diverse investments, were able to benefit substantially from the loans and subsidies available to encourage economic development. Just as the land development grant stifled the multiple-use of forests and hence alternative uses (as the incentive applied to the conversion of scrub and forest to farm land), so too did the price control on indigenous timber.

Amplifying his point that the economics of indigenous forestry were manipulated according to Government policies (see Chapter 2), Poole explains that the government flatly refused to increase stumpages, which were at a minimum to encourage utilisation and purportedly to keep the price of houses down:

> *We had a go at them* (government) *several times and pointed out the fact that they weren't doing anything to help conserve native timbers.....by keeping stumpage* (low). *We said that it didn't affect the price of a house because if a builder found a good market he was going to get his mark-up while you were charging a minimum stumpage* (Poole, 1989a).

Stumpage was calculated by taking the rough-sawn selling price and subtracting the costs of sawing, logging and transport from the forest as well as allowing a fixed return on investment. The residual figure was the calculated price of logs on the stump. However, since successive governments had maintained price controls on rough-sawn timber, the residual stumpage was often negative and had to be adjusted upwards to a set minimum (Conway, 1989). The Forest Service publicly argued on many occasions that price control on rough-sawn timber should be removed (NZFS, 1957; 1959; 1963; 1965; 1977). (It was unofficially introduced as a part of a general prices and wages control measure in 1936 and officially introduced in 1939). Price control did not apply to sawlogs or to products manufactured from timber, so that an estimated 70% of the cost of a house was under no price control whatsoever, nor was the price of the completed structure (NZFS, 1963). Asked why he thought that governments persisted with low stumpages, Poole (1989a) said:

> *Because they buried their heads in the sand! They thought that by keeping a low stumpage they were keeping the price of houses low. Now, they knew damn well they weren't but it was a good political ploy. Politicians used to go out on platforms and say: 'we're keeping the price of houses low' - and they weren't.*

Price control on rough-sawn timber was only removed in 1979. Poole concludes that governments could not care , although: "there was a hell of a row going on, knowing that in a couple of years they'd be out of office" (Poole,1989). If, as seems highly probable, successive governments knew that their purported reason for keeping stumpages low was not defensible, what was the 'political ploy'? Was the public gullible, ignorant, unable to marshal sufficient opposition and/or outmanoeuvred by private companies? Whatever the reason, (and the latter two seem more likely),

development loans, subsidies and low stumpages did not encourage the conservation of indigenous forests or create incentives to use more efficiently, timber or the forest for more benign purposes such as tourism.

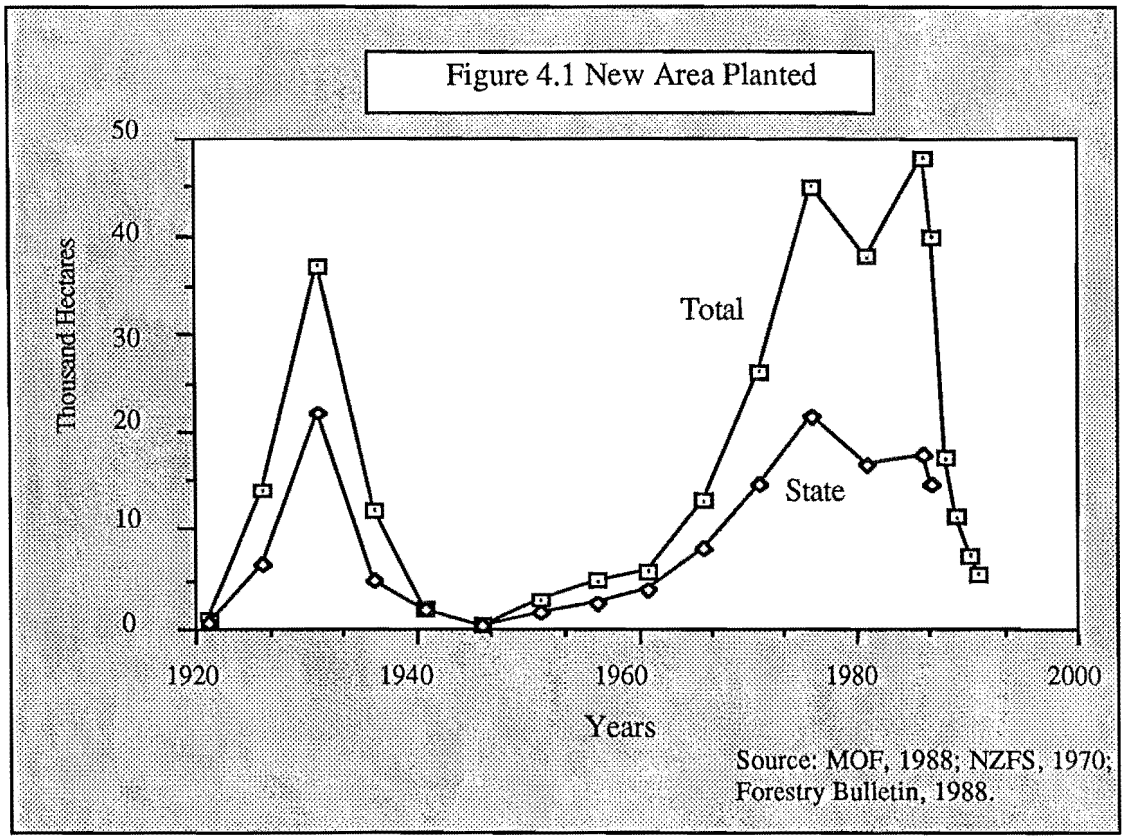
## 4.6 Plantation Forestry and Eking out Indigenous Supplies.

Although the need to conserve native forests was recognised by 1874, the concern for lowland forests was based mainly on a desire to maintain long term timber supplies, exemplified by the first annual report of the Director of the Department of Forestry, L. MacIntosh Ellis. He certainly recognised a wide range of forest functions, the need to protect forest resources, reforest and afforest 'unproductive' land and to eke out supplies when he set out the principles on which a forest policy for the nation should be based. Amongst other things, however:

> *the policy should be framed in such a way as to ensure the consumer a maximum supply of timber at the critical time towards the end of the duration of the country's virgin forests and before new crops take their place* (Department of Forestry, 1920).

This pre-occupation with timber supply is understandable as it was estimated that native timber would only last 30-50 years. Podocarp forests, from which most timber was now derived, were found to be complex, difficult to manage and slow to mature (up to 300 years), so that the benefits of plantation forestry with exotic species, principally *Pinus radiata,* seemed very attractive: so attractive in fact that the NZFS's attention was substantially diverted away from indigenous species.

This is denied by a former Director-General of Forests, A.P. Thomson (1971-74) who does not think that this was a deliberate strategy, or that the NZFS effort was diminished, or that personnel were diverted from indigenous forest management. Staff tasks were not switched from indigenous to plantation management: "it was just a matter of recruiting more staff" (Thomson, 1989a). Nevertheless, Forest Service records reveal that the emphasis on plantation species was a deliberate policy, pursued from the very beginning of the Forest Service in 1920. (It was not inspired by the need to create employment in the Depression years). The first and second plantation booms are a manifestation of the preoccupation with these species. These periods of new planting are shown overleaf in Figure 4.1:

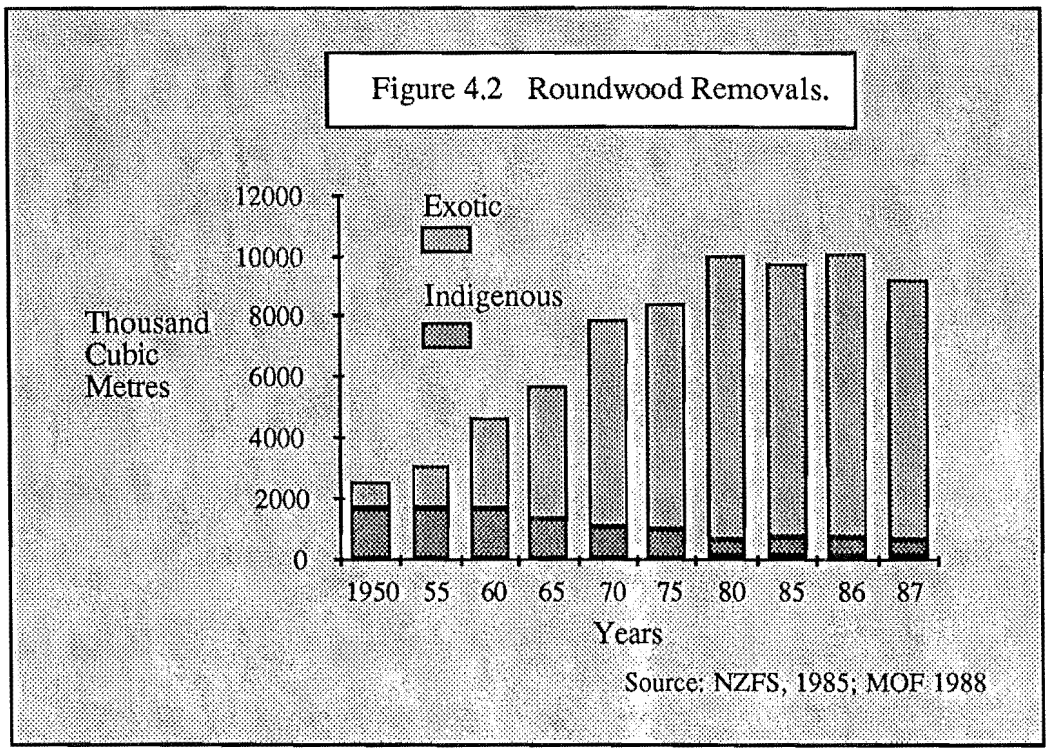



(The second planting boom has now come to an abrupt end as the Government has removed tax incentives for afforestation and put State plans on hold as it moves to privatise State plantations).[6] Although it might be true that new staff could be recruited in Thomson's time, this apparently was not the case in earlier years, for attention to plantation forestry was justified by the claim that staff experienced in indigenous forestry were not available. Furthermore, there was an apparent attitude of fatalism towards indigenous management because of the complexity and time taken to regenerate indigenous species and it was claimed that the fields of botany and ecology "did not favour experimentation" with indigenous species (NZFS, 1956).

The Forest Service apparently felt sensitive about this for it rationalised the continued indigenous logging by claiming that the plantation programme (with exotics) was saving between 20,000 to 30,000 acres of indigenous forest annually and that between 1939-1957 plantation forestry saved 200,000 acres and 2 billion board feet of indigenous timber (NZFS, 1956; 1957). How these figures were derived is not revealed, but

6 The figures for 1988 onwards for new plantings (i.e. over and above replacement planting) are derived from a survey of forest owners who account for over 90% of the commercial forest estate (Anon, 1988). The figures thus include State planting too, the separate reporting of which has now ceased. Though this fall in new planting is serious, a more important issue is whether existing forests will be replanted. This is uncertain at present, as it is understood that the Government's privatisation plans for the sale of standing plantations does not include covenants requiring restocking. Hence, variations in

probably relates to production from exotics, as total plantation out-turn more than exceeded the figure quoted above for the period 1939-1957. Some of this out-turn, though, would have been derived from converted forest.[7] This out-turn reached spectacular levels, as shown in Figure 4.2, below:




Familton (Acting Director-General of Forestry, 1986-87) asserts that:

> *What happened in this country really is almost without parallel in the world because we switched our total timber economy in a very short space of time from being dependent on our indigenous natural forests to the almost now total dependence on this plantation resource. I don't give a damn what anyone says, it really was a remarkable achievement. Radiata pine had lots of problems. It is basically a bread and butter timber. There's nothing "exotic" or fancy about it. We had to find out how to treat the stuff, how to season it and how to use it for a wide spectrum of uses and we've done it through our research and the rest of it. I can vividly remember in Canterbury, for instance, builders and people constructing houses saying: 'that stuffs no good unless its grown sixty years, and you can only use the heart'. And there was a fair degree of opposition to suddenly switching from West Coast rimu,* (for) *building a house in Christchurch, to radiata pine* (Familton, 1989).

This task did not really mean that indigenous forestry was neglected, but:

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net stocked area under plantations is going to be critical in future if increased output is to be sustained at or above present levels.

7 The conversion of indigenous forest and scrub (cut-over forest) to exotic species turned out to be a major source of future conflict between environmentalists and the NZFS, as will be discussed below in the Beech Scheme.

> *We maybe didn't accelerate or expand it because, it would be true to say, I think, that the priority nationally, for the country as a whole, was really on finding improved management techniques and processing techniques for the exotic plantations because they were needed to replace the supplies of indigenous timber* (Familton, 1989).

As plantation out-turn expanded at the end of the 1950's there was an intensive effort to encourage the industrial utilisation of the plantation output, already mentioned in Chapter 2. Pulp and paper mills and modern sawmills were commissioned, and a large export trade of logs gave the Port of Tauranga the highest tonnage throughput in the country. The high profile created by this plantation resource seemed to reinforce the belief amongst many foresters and politicians that wood and wood fibre were the principal products of forests, instead of viewing forests as an umbrella for a diverse range of activities and values.

This permeated the most highly placed decision-makers in the NZFS. Poole (1989a), in commenting on how fixed certain arrangements become, says:

> *As soon as you talk about a State Forest Park the public becomes fixed with that idea too, so you're going to have forest parks fixed in the public mind and they're going to become unusable. In other words you exclude any other form of forest use.*

Thomson has a similar opinion. Asked for the foresters role in indigenous forest management, given the political process, he said:

> *There's not one hell of a lot that foresters can do. As we've said, the control of land has been taken away from them and the policy is not to permit any form of utilisation.* Meaning? Logging? *Yes, logging* (Thomson, 1989a).

Conway (Director-General of Forests, 1974-78) has this to add:

> *Where we have perhaps failed though, is to sell forest utilisation sufficiently and the practice of forest management as a sequence of events which may present eyesores as a clearfelling, but go back two years later, go back five years later.....*(Conway, 1989).

Kirkland (Director-General 1983-86) also confuses utilisation with the production of timber and wood fibre. He cites Whirinaki State Forest as a successful example of the 'integration of conservation and development', "making it possible to harvest and maintain most environmental values very satisfactorily". Asked whether this satisfied the environmental lobby, he replied:

> *No, but the alternative, was a simple black and white one - use the forests whole-heartedly or don't use them at all* (Kirkland, 1989).

This brings us right back to the definition of "use" and the consumptive connotation, discussed in Chapter 2, above. No wonder industrial utilisation received top priority: consciously or sub-consciously, senior decision-makers were pre-empting other valid options. The scale of operations reinforced this emphasis, for industrial utilisation was manifest in the highly visible afforestation programme, with the ubiquitous radiata pine, subsequent clear-felling, visual scarring and the establishment integrated mills and associated forestry towns, such as Kawerau. This 'mobilisation of bias', with its heavy emphasis on technology and industry, downgrades alternative forest values and has been so pervasive that it has also affected forestry education and professional orientation, as discussed in Chapter 2, above. Even today, multiple-use forestry is still an optional final year subject for the bachelors degree in forestry at the University of Canterbury. If the general image of foresters is that of woodsmen and loggers, is this surprising?

## 4.7 Multiple Use and the Timber Ethic.

The concern to keep native timber supply options open whilst the exotic estate matured led to an unfortunate distortion of the concept of multiple-use forestry in New Zealand. Forestry was seen not as the mere sum or attainment of multiple values. It was something infinitely more:

> *deriving its greatness not solely from the complex inter-relationship of its constituent parts, but from its basic contribution to the solution of the Dominion's general land-use problem ....By keeping in a state of maximum productivity its own non-agricultural lands, forestry, through the maintenance of climatic equilibrium, regulation of stream flow and control of erosion, preserves inviolate many factors on which agricultural lands depend for their productivity"* (State Forest Service, 1939).

Whilst it was asserted that "only by putting non-agricultural or forested lands to a multiplicity of uses can forestry be made of greatest possible service to the community", one of those uses clearly included a timber production option in low altitude forests, even though it was acknowledged that the provision of the entire range of uses was seldom possible. This led to the view that national parks and scenic reserves were "single-uses" as timber extraction was precluded (State Forest Service, 1939) and, subsequently, to support for the forest park concept. Thus, Tararua State Forest was to be managed for recreational purposes and although sawmilling was to cease, the Forest Service would be able "to treat the forest to improve its far-distant productive potential, even if not realised for centuries" (NZFS, 1954). Similarly, commercial uses which included timber production precluded North-West Nelson State Forest Park being

dedicated as a national park (NZFS, 1966). In reality, national parks and reserves are not "single-uses" as they fulfil a number of roles. Although, for instance, national parks are designated principally to preserve indigenous flora and fauna, they have an important soil and water conservation function too and activities such as hunting and fishing of introduced animals, commercial beekeeping, grazing, tourism and recreation activities are permitted, with the consent of the Minister, provided they are not detrimental to the main preservation objective.

Leslie (1977) has previously commented on this subject, tracing the concern for multiple-use to 1944 when the Annual Report of the Forest Service "affirmed that multiple-use management is the essence of national forest policy". He also noted the primacy that timber production was given and how the Forests Acts of 1949 could be misconstrued, as, although recreation and amenity uses were provided for, they were not to be "prejudicial to forestry". He noted that 'forestry' was not defined, although the intention seemed to be timber production on State forest land that could so be used and soil and water conservation on the rest, or some combination of both. The introduction of the term 'balanced-use' in the Forest Amendment Act of 1976 appeared to Leslie to remove this ambiguity.

## 4.8 A Question of Definitions.

The Forest Service's multiple-use philosophy of accommodating a wide variety of uses compatible with the supply of timber has been succinctly reviewed by Leslie (1977). He perceived that the problem lay in the implementation of the philosophy. Two interpretations of the multiple-use concept were possible: the Dana-McArdle approach, by which each hectare would be managed for several purposes, and the Pearson approach, whereby multiple-use would be applied to large tracts of forest, but some would be managed for specific uses. The former approach was unworkable as some uses were correctly perceived as being incompatible (State Forest Service, 1939). The Forest Service followed the Pearson approach, which entailed the determination of a primary use for each administrative zone of forest and secondary subservient uses which had, by necessity, to be compatible with the primary (or what some people label the "highest") use (Leslie, 1977).

As the setting of priorities is inevitable when dealing with potentially conflicting uses, there is ample scope for argument and disagreement. This is especially true when extreme positions are taken. This seemed to be the case with the Forest Service which appeared to favour timber production wherever commercially feasible, i.e. in the

lowland forests. To counteract this the environmental movement has taken an opposing view, which some people see as the opposite extreme.

With hindsight it can be concluded that Leslie's hoped for redress by the introduction of the notion of 'balanced-use' was not completely satisfied by the 1976 Amendment to the Forest Act. This is because the term 'balanced-use' is ambiguous too. This inappropriate term should not imply the giving of equal weight to all uses; merely equal consideration. In the end the scales may be tipped strongly in favour of a narrow range of uses, which may or may not include timber. However, evidence of the pervasiveness of the timber ethic is still to be found in the current usage of the terms 'productive potential', 'production' forestry 'merchantable' and 'production' forests. Whilst timber and fibre production is implied, other products are not included or are accorded subservient status. For instance under the Noxious Animals Act, deer were not seen as a 'product' of the forest, but as a pest to be eradicated.

Hence it is apparent that multiple-use was, and still is, often equated with using or extracting something, as opposed to non-consumptive use, or non-conversion of resources largely found in national parks and reserves. The consumptive interpretation could arise out of an economic or 'use it' ethic (Miller and Armstrong, 1982) which may or may not include the renewing of resources. Thus resources in wilderness areas, scenic reserves and national parks were 'locked-up' (State Forest Service, 1939; NZFS, 1970, 1983). This emotive language was used to deride such functional arrangements and is still current terminology.

## 4.9 Multiple-use of West Coast Lowland Forests.

### 4.9.1 Sustained-Yield Forestry.

In lowland forests the multiple-use concept could only really be applied successfully to areas where sustained-yield forestry was being attempted or achieved, as options are severely curtailed when forests are 'mined'. Thus in order to evaluate the success of the concept, sustained-yield management needs closer examination.

Sustained-yield forestry had been the guiding philosophy of the Forest Service since the time of its first inception, though this term was not used until 1938 when plans for Lake Ianthe State Forest were announced (State Forest Service, 1938). However, as noted above, podocarp forests, from which most native timber was now derived, had been found to be complex, slow to mature and difficult to manage. Early research at the University of Canterbury's School of Forestry had suggested that these forests could be managed for perpetual yields (see for instance Hutchinson, 1931), but these efforts were

curtailed following the closure of the School. The Depres
including the Second World War made subsequent progress slo

Nevertheless, various management techniques were tried, starting
selection logging (NZFS, 1954; 1962). Some of these meas
benefit, though this was not evident until trials had first been und
Classic European silviculture was never achieved in podocarp forests in New Zealand.

Attempts were also made to reduce the annual cut to the level of the biological increment (Chavasse, 1986). This, too, was unsuccessful, primarily, it is supposed, because of the influence of the sawmillers. But as this influence has not been publicly recorded, circumstantial evidence must suffice. The Forest Service, for a long time, had opposed monopoly practices, long term sales contracts and price controls on sawn timber. Yet sawmilling enterprises became progressively larger, more vertically integrated and externally (mainly in Canterbury) controlled. Small, privately owned mills gave way to corporate enterprises, especially after the Second World War. These companies must have benefited considerably from the subsidy that low stumpages conferred on them, as the price of final products, such as houses, were not subject to price control. Successive governments did nothing to discourage this situation, but encouraged it, especially after 1960 when long term tenders were let, as discussed below.

Another divergence from the classic European practice was the linking of forestry to socio-economic objectives wider than the satisfaction of local needs. In New Zealand, forestry was a matter of national and regional policy but was also often in conflict with national policies to clear the land for farming, discussed above. Forestry itself was not just to supply wood and wood fibre, but also to provide jobs and income to local people and foreign exchange for the country. Thus, although the Great Depression was not the reason why New Zealand embarked on a plantation programme, the unemployed were found work in the huge afforestation scheme in the central North Island, the East Cape of the North Island and elsewhere. On the West Coast, this linking of forestry with wider socio-economic goals is perhaps best epitomised by the West Coast Committee of Inquiry's proposals for podocarp and beech forest utilisation.

4.9.2 The West Coast Committee of Inquiry.

Notwithstanding the land encouragement grants and the activities of the LSB, the relative area of forest and bush cleared for agriculture was not great on the Coast, as there was not a vast extent of land that was suitable for farming. (This was unlike the situation in many other parts of New Zealand). This was because of the long narrow nature of the Coast, bounded by the sea and mountains, and the heavy rainfall. Some

areas, such as the rimu terrace soils became waterlogged when the forest cover was removed and became unproductive for both forestry and farming. It is only recently that their value for sphagnum moss production has been realised.

Up to the Second World War the economy of the Coast had become reliant on two main activities, coal mining and forestry, as gold mining had long since had its heyday. After the war, coal mining was in the doldrums too, production declining by 22% between 1947-58. The results of a West Coast Resource Survey (conducted as part of a National Resource Survey by the Ministry of Works and Development) apparently alarmed the Labour Government, prompting it to set up the West Coast Committee of Inquiry (Jewell, 1988). Pursuant to a Cabinet minute of 12 May 1959, the Committee was charged, *inter alia*, 'to inquire into and within six months of its appointment to report upon the short and long term feasibility of developing manufacturing and other industries'.

Within the short time available, the Committee managed to visit the Coast twice and receive and consider one hundred submissions. It produced an overview of existing and potential resource opportunities, largely devoted to a review of mining, farming and land development and forestry. Tourism received just over a page of coverage in the main body of the report and half a page of analysis in the appendix. The main conclusion was that tourism facilities should be upgraded to cater principally for the domestic market. The glaciers and scenery were perceived to be the main items of tourism interest, but:

> *the latter alone will not prove sufficient to attract many New Zealanders to the area. There must be something novel to see and something interesting to do* (West Coast Committee of Inquiry, 1960b).

The speedy completion of the Haast Pass highway was recommended, as was the building of a hotel/motel at Franz Josef. 'Adequate financial support' for the Westland National Park Authority was also advocated in order to establish camping grounds and facilities, maintain tracks, provide recreation and community amenities and 'employment of suitable rangers and guides'.

The flax industry was dismissed in eleven lines, as 'such land would give a better return in grass'. Feral animals were also given cursory treatment as noxious animals (in seven lines), with the recommendation that their control be given priority.

The Committee comprised four members and was officially advised by the Assistant Secretary of the Department of Industries and serviced by two secretaries. It did not, it seems, undertake any original research itself and was grateful of an offer by Fletcher Holdings Ltd. to pay for Arthur D Little Inc., a U.S. consulting firm, to prepare a

special report on the potential development options on the West Coast for presentation to the Committee (Little, 1960). Pending the investigations by this firm, the Committee brought down a report (West Coast Committee of Inquiry, 1960a). The Committee recommended, amongst other things, that short term forest harvesting licences (cutting rights) be terminated and that licences for at least 10 years be substituted. It also saw the need to foster more efficient utilisation and recommended an investigation into the processing of wastes into by-products. It supported the NZFS bringing beech forests under efficient management and pressed for research into possible end uses (for timber and wood fibre). It delayed detailed consideration of timber utilisation industries until the Arthur D.Little report was to hand.

A supplementary report was released when the Little findings were made available. These "were in line with the general opinions arrived at by the Committee", so that "the general recommendations in our main report are now fortified by the support of experts of world standing" (West Coast Committee of Inquiry, 1960b).[8] The Committee thus recommended the setting up of:

> *a fully efficient, integrated and diversified industry,* (which) *can be successfully developed in the West Coast region only on a large scale* (West Coast Committee of Inquiry, 1960b).
>
> *The feasibility of these .... presupposes full utilisation of the forest crop and the eventual attainment of sustained-yield management by means of selective logging* (Little, 1960).

The Committee concurred with this view and recommended that logs be sold directly to an integrated organisation which would need to be set up. However:

> *the royalties on these logs should be adjusted to allow for the higher costs incurred as contrasted with clear-felling* (West Coast Committee of Inquiry, 1960b).

This sounds like another proposed subsidy, but is consistent with the consultants' conclusion that: "few projects would be economically viable without substantial Government support" (Little, 1960).

Surprisingly, these firm recommendations were made despite the consultants' admittance that:

> *Basic information on natural forest generation, silviculture, the planting of exotics, selective logging and new product development is so inadequate that*

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8 It should be borne in mind that Arthur D. Little was commissioned to study the Coast's industrial potential and that the study was based on an examination of existing opportunities to attract private investment for the establishment of new industry . Two forest product units were proposed: one based on podocarps, the other on beech.

*intensive research focused on the West Coast environment is urgently needed* (Little, 1960).[9]

In 1962, the government decided to:

> *i) grant 20 year log supplies to sawmillers, each concession to be sold by public tender,*
>
> *ii) approve the establishment of a plywood factory,*
>
> *iii) require sawmillers who had obtained 20 year log supplies to upgrade their mills and to enter into a contract to process 80% of the sawmill cut on the Coast* (Jewell, 1988).

Thus a previous agreement limiting the granting of cutting licences to those who were actually involved in the industry in 1950 was dropped, as recommended by the Committee. The door was now open for Fletchers to act. At Ruatapu, it built "the most modern timber processing plant in New Zealand as well as building at the time the best equipped and efficient plywood factory in Australasia" (Jewell, 1988).

Taken together, the findings of Arthur D. Little and the Committee of Inquiry and the action taken by government, Fletchers and other companies reinforced the notion that the optimum use of the Coast's forest resources lay in large scale integrated industrial development. There was no survey of alternative uses, save for the cursory treatment of tourism which led to a recommendation that the construction of the highway through the Haast Pass should be accelerated. The result was that a few externally based milling organisations gained an even stronger control over the use of the forests, as smaller, locally based millers could not afford to upgrade their mills. Many of the latter, with their cutting rights, were bought out by the larger ex-Coast millers and as a result long term licence holders allegedly reduced their total workforce by 20% between 1960-73 (NFAC, 1977). 'Rationalisation' was intended by the Committee and supported by the NZFS, but long term licences had a double-edged effect. Though they probably did bring about more certainty in the industry, fostering investment in more efficient plant and equipment, they also tied forests up for 20 years in timber and wood fibre production. This period was subsequently extended in some cases (see Chapter 1, above). In addition, substantial shorter term rights were subsequently given to Fletchers and Carters in the mid 1970's, which they endeavoured to convert into long term

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9 Although the intention was to selectively log, this method had not been worked out or successfully proven on the West Coast. In 1962-63, selective logging by frequent light fellings was attempted and trials were carried out to prove the efficiency of tractor logging and hauling (NZFS, 1962; 1963). These did not prove successful and clear-felling was reverted to. Chain-saw milling has since proved technically feasible, but at present requires further evaluation, though it seems to have economic potential (Ministry for the Environment, 1988a).

licences (NFAC, 1977b). Finally, as selective logging did not prove feasible, clearfelling, without replacement, substantially reduced future options even further.

4.9.3 Beech Utilisation Proposals.

Beech comprise five species, though two have high potential for sustained-yield management, red beech (*Nothofagus fusca*) and silver beech (*Nothofagus menziesii*). They regenerate quickly and have readily recolonised old mine workings on the Coast. They have been a valuable source of wood for over a hundred years. Their potential was studied by Cockayne in the 1920's: he reported on their distribution, ecology, classification and regeneration in 1926, concluding that because of their over-maturity and decay, the sooner they were milled the better (Kirkland, 1973).

Much of the beech forest has only been partly logged for the best sawlogs and for podocarps, which often occur in association with beech. However, in the 1930's, investigations were carried out into the silviculture of red and silver beech. It was subsequently found that beeches are the most easily managed of New Zealand's indigenous tree species, but are very susceptible to rot and attack by pin-hole borer (Thompson, *et al*, 1972).

Although the West Coast Committee of Inquiry (1960) noted that beech production could be increased if the market would accept it as a satisfactory building timber and if the price was competitive to rimu, it was not until the NZFS Annual Report of 1970 that the potential for the fuller industrial utilisation of the species was discussed. A White Paper followed in 1971 and then an explanatory booklet outlining broad industrialisation plans (Kirkland, 1973). This booklet noted the many values of beech forests, pointing out that the greater proportion of them were (and remain) protection forests for soil and water conservation purposes. These protection forests also served recreational needs too, and can be found in most of the major mountain valleys on the West Coast, extending to high altitudes, so that they predominate in Arthur's Pass National Park. About this time an environmental impact report on the utilisation proposals was prepared.[10] It dealt with the concept only and was to satisfy the government that the

10 Changing attitudes and increased concern about the effects of development projects, such as the development of Lake Manapouri for hydro-electric power, led, in 1972, to the introduction of the Environmental Planning and Enhancement Procedures (Tilling, 1980). The procedures were established by Cabinet Minute and came into effect on 1 March, 1974. They were thus non-statutory and were two staged, comprising an Environmental Impact Assessment (EIA), to determine the environmental consequences of choosing between various development options, including doing nothing and an Environmental Impact Report (EIR), to describe ways of meeting certain objectives and the environmental consequences of doing so. The procedures were applicable to:

(a) Works or policies of government departments which could have had a significant effect on the human, physical or biological environment.

broad scheme was acceptable on environmental grounds. This it did, recommending that:

> *subject to environmental safeguards detailed in later recommendations, there appears to be no environmental reasons why the beech forest scheme should not proceed to the next stage* (New Zealand Officials Committee for the Environment, n.d.).

The likely social impact was also covered, the Committee noting the need to retain services, increase employment opportunities and reduce the high level of out migration from the Coast. It concluded that only the beech scheme, a possible ilmenite industry or the export of coal could do this significantly. However, no detailed analysis or justification for this bald conclusion was presented. In fact, the entire discussion of the likely future social and economic impact in Westland only covered 2-3 pages (New Zealand Officials Committee for the Environment, n.d.).

Perhaps this was not surprising, since the whole orientation of the proposal was industrial and the 1960 Committee of Inquiry had concluded that large scale processing was the only option worth considering for providing a significant number of jobs. Nevertheless, it is interesting to note that despite the purported concern for the people of the West Coast, it took fourteen years for the NZFS to call for proposals to put into effect the Committee of Inquiry's beech recommendations. In 1974, it issued an invitation to industry to submit proposals for the utilisation of up to 785,000 $m^3$ of pulpwood and 63,000 $m^3$ of peeler/saw logs per annum on the West Coast and 170,000 $m^3$ of pulpwood in Southland (NZFS, 1974).

According to Kirkland (1973) the motivation for the NZFS proposals were:

> *i) the need to make use of wood at present wasted in the forest and in the mills,*
>
> *ii) the desire to end the long era of exploitation and to manage all production forests for sustained yields of wood,*

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(b) Private proposals which could have affected the environment and which could have required part of whole financing by money appropriated by Parliament.

(c) the granting by the Crown of all levies authorisations, permits and privileges which could have had environmental implications, pursuant to various acts, such as the Forests Act, or the National Parks Acts.

The EIR on the Beech Scheme must have been one of the first produced under these procedures. The first stage, an EIA, does not appear to have been prepared, but this was not uncommon at that time. In those early days EIR's were not very sophisticated documents, often being descriptive reports with little analytical detail.

*iii) the recognition of the social benefits which would result from the better short and long term employment opportunities provided by efficient processing and sustained yield management of forests.*

A doubling or even quintupling of jobs for bushmen (from 300) was suggested as a result of better utilisation.

There was also concern that if the Coast's sawmillng industry continued to overcut the mainly podocarp resource in the project area, this would be exhausted in not much more than 30 years. The planted exotics would be unlikely to mature in time to prevent the close down of much of the industry (Kirkland, 1973).

> *The choice then is not simply between preservation and the use of the beech forest, but between the present essentially exploitive use and conservation, in the sense of wise management. Without improved utilisation there is no possibility of better forest management and thus no choice* (Kirkland, 1973).

The choice of doing 'nothing' or using the forest for non-consumptive purposes were thus dismissed without any apparent consideration. The forest management objectives belie this narrow perspective. They were to:

*i) encourage efficient use of the forest resource by integrated industries,*

*ii) restock all logged forests by regeneration, conversion to exotics or supplementary planting and ensure the potential for continued production,*

*iii) manage suitable beech forests on a sustained-yield basis,*

*iv) maintain water quality within acceptable standards and prevent mass movement and degradation of soils,*

*v) consistent with the above, maintain recreational, aesthetic and wildlife values* (NZFS, 1974).

Although these objectives do show a concern wider than mere wood and fibre production and processing, they are still very one-sided, reflecting a sector view of development. For instance, recreation, aesthetic and wildlife values were subservient to the other objectives. One of these was the conversion of beech to exotics over large areas, which would have changed the nature of the forest and its appreciation by humans and animals alike.[11] Furthermore, in order to regenerate beech and make way, in places for exotics, the forest had to be clearfelled:

> *...beech seedlings commonly stagnate entirely under the shade of the forest canopy. Conversely, the survival of young seedlings is greatly improved if they are protected by some shade from the drying and scorching rays of the sun.*

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11 Studies of beech management in Southland have apparently shown that numbers of some sensitive bird species have been reduced to zero in logged forest, with no evidence of these species returning to the regenerated stands 25 years after logging (Secretary for the Environment, 1986a).

> *Survival is also increased by disturbing the leaf litter and humus of the forest floor to expose the mineral soil.....At intervals of between 3-7 years, particularly after a hot dry summer, heavy seed falls, known as "masts", occur. If the seedlings resulting from these falls can be fostered under the shade of the mature forest, it can subsequently be clearfelled and the full light thus provided for rapid growth of established seedlings* (Kirkland, 1973).

Alternative commercial use of these forests would either not survive this process or be severely modified and disrupted.

Another glaring omission is the lack of specific socio-economic objectives to foster regional and local employment and income, since these were of purported central government interest. So, who where the beneficiaries of this scheme to be? The terms of reference for those submitting proposals also failed to mention any socio-economic objectives. In fact, the Minister of Forests stated in the foreword to the invitation:

> *The main objective of planned industrial development is therefore to reduce forest waste to a minimum while being able to use residues from existing and proposed industrial plants* (NZFS, 1974).

Provided that there were efficient industrial schemes using renewable natural resources, it was assumed that:

> *such schemes would at the same time stimulate and enrich the social and economic development of both the West Coast and western Southland* (NZFS, 1974).

In other words, in terms of neo-classical economic theory, it was assumed that the benefits of industrial development would trickle-down to society at large and be of benefit to West Coasters.

Two major proposals were received for sulphate pulp mills producing 600 tonnes per day. But, in May 1975, the Government deferred consideration of these proposals, wanting other possibilities explored as it felt that mills of this size could strain existing resources. Jaakko Poyry Ltd., a Finnish consultancy, was commissioned to undertake a feasibility study of the utilisation of wood from West Coast forests and from plantations in Nelson and Marlborough. They concluded that a particle board mill at Reefton, a pulp mill in the Upper Buller and a plywood plant using plantation sawlogs would be viable.

However, these projects were never initiated for a number of reason. One was the lack of a positive programme to utilise and market beech (Gleason, 1982). Thomson (1989a) pointed out that a relatively small proportion of sound commercially viable sawn timber would have been produced, so that unless a market could be created, the rest would be "wasted". Low stumpages on podocarps were also cited as a disincentive to

utilise other species (Chevasse, 1978). Sweet (1977) criticised the Jaakko Poyry report for only considering processes whose economics were well established and pointed out that the NZFS were reluctant to plant exotics as they did not regard the West Coast as a viable region to extend them. There were also reservations about technical aspects of the scheme, exotic conversion and beech management and doubts about the wisdom of moving from experimental conditions to a fully-blown pulpmill using maximum advertised volumes straight away. A high risk would have been involved (New Zealand Institute of Foresters, 1975).

Recently (in 1985) the Government approved a one year sale of 50,000 $m^3$ of beech woodchips to Newmans chipmill in Nelson, though chipping on private land has been taking place. In 1986, the Blakeley Committee reported:

> *that it is widely agreed that a much higher level of sawn wood recovery could be achieved if the sawmill and chipmill were operated as as integrated unit on one site. To achieve this improved utilisation, industry considers that an operation of at least 150,000 $m^3$ per annum log input would be required, with a security of supply on a long term basis* (Secretary for the Environment, 1986a).

One of the last tasks of the NZFS, Westland Conservancy, was to draw up tender documents for the industrial utilisation of a much smaller area of the resource, following the Government's action to reserve additional areas of forests recommended by the first Blakeley Committee. Despite talk of the imminent approval of a $35 million scheme to produce furniture parts, flooring and panelling for export (*National Business Review*, 31 October, 1986) no definite proposals have been made public. Apparently there is much behind the scenes manoeuvring as the Ngai Tahu people, under the provisions of the Treaty of Waitangi, have demanded to be party to the allocation and management of this resource. Unofficially, they also seek compensation for 'lost' opportunities resulting from the allocation of land in South Westland, following the Governments decision to 'lock-up' the area (Howse, T., 1989).

## 4.10 Multiple-Use and Protection Forests.

It would be wrong to conclude that uses other than timber production were not provided for. McKelvey (1984) perceives a chronological accretion of different uses, apart from timber, starting with the management for soil and water conservation in the mid 1950's, recreation (early 1960's), nature conservation (early 1970's), landscape (late 1970's) and the provision of educational opportunities (from the early 1980's). It cannot be denied that much has been achieved. Forest parks, such as North-West Nelson and Victoria have been enjoyed by thousands of people even though they are not as spectacular as national parks. In recent years a good deal of effort has gone into

planning and interpreting these parks for the better enjoyment of the public, New Zealanders and overseas visitors alike. However, it can be argued that this has principally occurred in "upland" and lowland protection forests where soil and water conservation is paramount. These forests make up 69% of the nation's indigenous forest cover (Kirkland and Trotman, 1974; Froude *et al*, 1985). Much of this area has probably been uneconomic to log too; hence the conversion versus non-conversion conflict has probably been avoided by default rather than by explicit design.

Furthermore, it took decades for the multiple-use concept to be put into practice. There is no one simple explanation for this delay. It cannot be entirely because of the lack of demand. For instance, scenic qualities were long regarded as being important. The first national park in New Zealand was established in the 1880's and in 1901 17,000 ha was purchased in the Otira Valley for Arthur's Pass National Park, which formally came into being in 1929 (Burrows, 1974). Moves to reserve areas of lesser grandeur for their scenic value, such as the Summit Road Protection Area on the Port Hills, Christchurch were also afoot in the 1920's and 1930's (Tilling, 1986). However, timber production in these areas was not a major issue, as it was in lowland forests. In these latter forests multiple-use has not been so successful.

## 4.11 Summary.

In summary, although indigenous forests were appreciated for a wide range of uses and spiritual values, these were substantially undermined and relegated to insignificance as the Maori lost their turangawaewae. In a modern society, subsistence values were no longer adequate, and even if they had been, denial of access to the land or to decisions on how that land and the forest thereon should be managed, prevented alternative commercial options being exercised to any significant extent until very recently.

Deforestation continued in lowland indigenous forests: attempts at sustained-yield management failed; clearfelling without replacement was reverted to. Industrial utilisation proposals gained momentum. It was forestry for industry, rather than forestry for people: the millers got their way: in the main, individuals were mere camp followers. No other choices were presented, not even non-traditional industrial possibilities such as ethanol production (Sweet, 1977), let alone alternative forest-based uses which are the subject of this study. This conventional, industrial view of forestry dates back at least 60 years to Cockayne's early conclusions and has proved to be a very difficult paradigm to alter.

One of the arguments often levelled at alternative uses of indigenous forests is that, generally, they have not been economically viable. At face value this lack of 'viability'

seems to be confirmed by the relatively few alternative forest-based operations, keeping only a small number of people gainfully occupied. However, these activities cannot compete with the juggernaut of industrial change, external manipulation and exploitation. Had they been given appropriate consideration, plus the scale of subsidies and loans that industrial proposals had, the story might have been very different. Furthermore, economic variables alone, such as those used to calculate internal rates of return, provide a highly misleading measure of development. As shown above, lack of concern over how and which local people would benefit from industrial investment and what their quality of life would be in a substantially changed environment were not even addressed. This is illustrated by Simpson-Housley (1980) who concluded a survey of West Coaster's attitudes to industrial development by saying that "a high proportion of the sample population strongly favoured the continued growth of industry". This was in response to a question: "Do you favour the continued growth of the following industries on the West Coast....." The next question asked respondents to rank the options (farming, fishing , forestry , mining, tourism and manufacturing based on industries other than these) in order of their preference for future large scale industrial development on the Coast. Apart from the bias this question introduces, what this would have entailed was never explained to respondents. How can meaningful choices be made then?

The industrial, utilitarian bias of the NZFS was not without its critics. By the end of the 1960's there was a general environmental awakening in New Zealand, following a similar process in Europe and the U.S.A. This was heightened by the hydro-electric power plans for Lake Manapouri and the opposition to clearfelling and exotic conversion suggested by the Beech Scheme. The continued over-cutting, in sustained-yield terms, of podocarp forests raised mounting concern.

## 4.12 Curtailment of Indigenous Logging.

### 4.12.1 Judicial Processes.

In Chapter 1 above it was noted that environmentalists sought protection of indigenous forests by means of legal protection in reserves and national parks was sought. In these areas logging was prohibited and other uses only permitted if they were in keeping with overriding preservationist objectives. The multiple use concept had became discredited: environmentalists did not trust the NZFS to sensitively manage the forests or to take public opinion seriously. Part of the reason for this was inadequate statutory land use provisions.

Unlike land-use planning, no legal provision was made to allow public participation in the formulation of forest working plans for State 'production' forests. (These plans had to specify the silvicultural operations to be carried out, the area of operations and quantity of produce to be disposed of, the protection and development operations to be carried out and other matters the Director General of Forests thought fit). However, public participation was provided for in the preparation of working plans for State forest parks, but this was only written into law in 1965. Nevertheless, all forest plans were subject to the approval of the Minister and could not be altered except by the Minister on the recommendation of the Director-General (Forests Act, 1949). There were no rights of appeal. Thus formal public participation was limited, even though there are acknowledged limits to involving the public (Wengert, 1976).

The Town and Country Planning Act, 1977 and it predecessors, however, does provide for the control of land use by requiring every territorial local authority (city, borough, district or county council) to prepare a statutory binding District Planning Scheme. Permitted land uses must be specified for each and every area (zone) within a local authority's jurisdiction. Two broad classes of use were first introduced in the 1953 Town and Country Planning Act: those allowed as of right and those permitted, subject to conditions. Permission for the latter (conditional uses) involves public notification, council hearings, and resolution of appeals by the Planning Tribunal, a body chaired by a District Court judge, whose decision is final. Thus local authorities could have controlled indigenous logging, at least on private land. The Crown, however, was and remains exempt from the provisions of District Planning Schemes (except for public housing proposals). Thus, the NZFS only notified local authorities of it plans as a matter of courtesy.

Whilst many urban uses have been regulated, the control of rural land use practices has been historically lax. To a large extent this reflects the vested rural interests of elected councillors, who, in rural areas, tend to be farmers. They are charged with preparing planning schemes. And so it happens that logging and land clearance in connection with farming have been allowed as of right. It is only recently that ordinances have been passed restricting the cutting of trees (Henderson Borough in Auckland in the mid 1970's) and the clearance of indigenous forest (in 1988, this became law in Waimea County, Nelson, as a conditional use ). However, there was a very small proportion of private land on the West Coast.

The change to the Local Government Act 1974 establishing mandatory regional planning authorities throughout New Zealand, and the binding of the Crown to approved regional planning schemes by the 1977 Town and Country Planning Act, seemed to offer some

hope of control of deleterious forestry practices. However, as pointed out in Chapter 1, the Crown has only been bound by what it wants to be: regional planning schemes cannot dictate government policy; nor can the Planning Tribunal, which in any case does not have the final jurisdiction on regional planning schemes, merely advising the Minister who makes a final decision when there are disputes (see WCUC v Prebble, *et al*, 1988).

Notwithstanding these legal provisions, no district council on the West Coast has chosen to restrict forestry operations. Similarly, the WCUC has promoted the continuation of indigenous logging, even where this is unsustainable, in order to provide mills with indigenous timber until plantation species are mature.

And so it might be concluded that forestry and land development had built up a momentum that individuals and small user groups were unable to influence, on their own. Despite changes to the Forests Act in 1976 and the introduction of the concept of 'balanced-use' and an Indigenous Forest Policy, environmental groups were not satisfied. Other tactics were necessary.

4.12.2 Mass Protest.

A geographically wider, more powerful constituency was evolving. The Native Forest Action Council (NFAC), in cooperation with other environmental groups, drew up a petition. This was known as the Maruia Declaration. Circulated between 1 January and 19 July, 1977, it was signed by 341,160 people. It read as follows:

> *We, the undersigned people of New Zealand,*
>
> ***Being concerned** that the exploitation of our country's native forests has gone too far,*
>
> ***Believing** that the protection of what remains of these forests is more important to us than further additions to our material affluence gained at their expense,*
>
> ***Yet knowing** that the exploitation and destruction of these native forests is accelerating in many regions through the lack of an urgent commitment to protect them,*
>
> ***Now declare** our support for these six principles:*
>
> ***1. Native forests, wherever they remain, need recognition and protection in law.***
>
> ***2. The wholesale burning of indigenous forests and wildlife has no place in a civilised country.***
>
> ***3. The logging of virgin forest should be phased out by 1978.***

***4. Our remaining publicly owned forests should be placed in the hands of an organisation that has a clear and undivided responsibility to protect them.***

***5. To reduce commercial pressures on native forests, the growing of fine quality exotic and native timbers on land not presently forested should be given encouragement.***

***6. It is prudent to be conservative in our consumption and export of those forest products, especially newsprint and packaging paper, which make heavy demands on our precious resources of land, energy and water.***

These principles were accompanied by explanatory text, which is too long to go into here. Two matters deserve some elaboration though. Westland was declared to be an exception to Principal 3, as:

> *there, the regional economy is still dependent on some indigenous sawmilling which must decline over a longer period while alternative industries, including exotic forest industries, are urgently developed .....But elsewhere, the logging of virgin native forests is an episode that belongs to history....*(NFAC, 1977).

(Nineteen percent of the West Coast population was estimated by the Ministry of Works and Development to be directly or indirectly dependent on forestry).

The explanation of Principal 4 deserves to be quoted in full as it portended the present administrative framework which came into effect in 1987:

> *It is too much to expect departments mainly concerned with wood production or land clearance to adequately protect these forests. The organisation we need could be formed by taking the Parks and Reserves division from the Lands Department* (DL&S) *and the Environmental Forestry Division from the Forest Service, and combining these divisions in a new Nature Conservancy charged with safeguarding all our remaining native forests* (NFAC, 1977).

The petition was the largest presented to Parliament until overshadowed by a petition on Homosexual Law Reform in 1985. NFAC was not satisfied by the 1976 Forest Amendment Act or the revised Indigenous Forest Policy or the statement by the Director-General of Forests (Conway) that 'we wish the petitioners would get off our backs and let us get on with what they want us to do', for:

> *the Forest Service is not doing what hundreds of thousands of New Zealanders want it to do. They themselves have no alternative but to do their best to call the Forest Service into account, as they are entitled to do in a democracy* (NFAC, 1978).

NFAC was not opposed to some beech utilisation and supported the setting up of a particle board mill at Reefton as suggested by the Jaakko Poyry report, but only on the basis that beech sawlogs would be extracted from areas already committed to podocarps.

It was opposed to the conversion of indigenous forests to exotic plantations. NFAC claimed its proposal would reduce the maximum allowable cut by 15%, but said that this permissible maximum had been undercut by more than 20% for at least a decade, because millers were unable to sell their product in competition with radiata pine. "The proposed reduction in the maximum permissible cut will therefore have no effect on the actual cut, nor on present employment" (NFAC, 1978)

## 4.13 Outcome.

With respect to the debacle over indigenous forest management over the last 15 years or so, foresters in hindsight, seem to have been politically naive. Like architects and doctors, to name a few similar professional groups, they developed a belief that issues could be resolved in a technical fashion, as they were not directly answerable to the public. They did not have to justify their actions in court or be cross-examined under oath, as land use planners have been since the establishment of the Town and Country Planning Appeal Board (now Tribunal) in 1953.

When asked why it was that the mood of politicians and lay people moved against the Forest Service and more towards the environmental movement, Conway (1989) says:

> *I think because we weren't sufficiently alert to the growing environmental movement. I was certainly unaware of it (until) I went to the Stockholm conference on the environment in 1972.....I came back from the conference and re-wrote the indigenous forest policy. We were not good professionally at selling our wares, selling our profession. We were poor from a public relations viewpoint. But in defence of that I can say this, that we had a certain vote, Vote Public Relations.....I used to say to Venn Young, Minister (of Forests) at the time: 'give me another $100,000 on that vote and I'll cut down your ministerial letters that you get by 50%'. But one of the first things cut would be public relations. We just didn't have the money and we didn't have the expertise to put our case. We were not good manipulators of the media, unlike certain other people who were very skilled at it and to their credit played it very well, and went to excess at times and then justified the means.....we, of course, started on the back foot as public servants - everything we said and did was suspect.*

In the late 1960's it might have been excusable to have been unaware of the growing environmental consciousness, but even in New Zealand the environmental debate over the use of lakes for hydro-electric power was in full swing by the end of that decade. By 1972 Environmental Planning and Enhancement Procedures were published, coming into effect on 1 March 1974 (Tilling, 1980). As these long pre-dated the Maruia Declaration of 1977, one can only conclude that the senior decision-makers in the Forest Service severely misjudged the changed mood which environmentalism brought about. It is as if the NZFS was in a time warp, unable to make significant changes because of

their organisational and individual modes of behaviour. Postman and Weingartner (1971) put it more succinctly:

> *In other words, bureaucracies are the repositories of conventional assumptions and standard practices - two of the greatest accelerators of entropy.*

Environmentalists had a different development philosophy to the industrial, large scale view epitomised by the NZFS. The different factions were talking past each other. It is unlikely that no amount of money would have changed that fact.

The social value of forests and the political nature of allocative decisions seem to have been inadequately grasped by foresters. West (1985), a political scientist and keynote speaker at the 1985 Australian and New Zealand Institute of Foresters Conference in Hobart, asserted that foresters had concentrated too much on technical solutions and not enough on the political framework. She advised foresters to argue that forestry linked conservation and development and embraced preservation. To do this they had to promote the long term sustained-use of indigenous forests and to enter the public debate about forest management. Both Australian and New Zealand foresters had evidently been unsuccessful in this task, as she observed that conservationists were dominating the context of the debate and its style. The latter all too often reflected a zero-sum model which viewed choices in artificial black and white terms. The danger was that this model would be used to boycott development of any kind in key areas of the forestry industry. Foresters, on the other hand, needed to balance profit maximisation and 'conservation efficiency' for:

> *If foresters focus on profit return and ignore the demands of conservation, there may be inadequate community support, and therefore inadequate political support, for the future of their industry. If foresters are insensitive to community and political attitudes, they are not true professionals. For forestry professionalism is the art as well as the science of balancing the business perspective [aimed at economic productivity] and the community perspective [often more concerned with social productivity]* (West, 1985).

By 1985 however the damage to the NZFS's reputation had been done. Yet old attitudes die hard. For instance, although Kirkland (1988) asserted that the demise of multiple-use management was due to the '*...general problem of measuring the efficiency with which multiple-use public agencies allocate resources*', on reflection, he conceded that it was impossible to measure the value of these resources in any objective way, and furthermore:

> *I really think it comes back ultimately, as any political thing does, to the perceptions of the public at large and to the support which they are prepared to give to a particular philosophy. If you accept that that kind of approach is essentially politically driven, the corollary of that is that the outcome depends upon the perceptions of people generally as to what they want. Those*

> *perceptions tend to change as I think was very effectively demonstrated by the changes wrought by the conservation groups roughly in the 70's and 80's* (Kirkland, 1989).

Of course, people's perceptions and wants do not necessarily have to become political issues, but as NFAC, the Joint Campaign on Native Forests and others have demonstrated, they can be if intransigence is encountered. How else was the preservation of indigenous forests to be speedily facilitated? Kirkland disliked the fact that 'balanced-use' became '*a matter of judgement*' by resource professionals and that these professionals were questioned by unsatisfied client groups. But, surely, this was inevitable given the nature of the task. For Kirkland (1988) ultimately these decisions had to be made politically, meaning by politicians, for:

> *It is not...a particularly sensible or sought after goal of politicians to have to adjudicate continually between competing claims, and an alternative mechanism is likely to be sought* (Kirkland, 1988).

The 'alternative mechanism' was the separation of commercial and non-commercial functions and the creation of different government departments and SOE's to be responsible for them. This reorganisation of the civil service was one of the manifestations of the Labour Government's policies, which is based on a neo-classical philosophy of social and economic development.

The problem is that politicians seldom like to take definitive action until they are forced to. They often vacillate until an irreversible situation has been reached. This seems to have been the case with the protection of indigenous forest cover. Sustained-yield management would have provided protection and allowed a wider range of uses to be accommodated, but too little action was taken too late. When allocative decisions were finally taken on forests north of the Cook river, little national political risk was involved in the adoption of a predominantly preservationist policy, as roundwood removals from plantations had long since eclipsed indigenous removals and most of the remaining large forestry companies on the West Coast were not dependent on the latter, as noted in Chapter 1, above. There was only local political fall-out, but as the West Coast had a strong Labour majority and only one member of parliament anyway, the Labour Government probably calculated that preservation was a risk worth taking. If so, it was right: the Labour M.P. was returned at the subsequent General Election in 1987, albeit with a reduced majority. There was more to gain in urban electorates, such as Auckland, Wellington and Christchurch where the main opposition to indigenous logging was. The recent decision on South Westland forests can be interpreted in the same light. With respect to the general election in 1990 though, environmental

protection is unlikely to be a sufficient vote-catcher to offset negatively perceived national socio-economic policies.

One of the most unfortunate outcomes has been that 'conservation' has implicitly or explicitly become equated with preservation and regarded as separate from 'development' (see for example, Secretary for the Environment, 1986). The interrelationship between the social, ecological, physical and economic elements of change has been ignored in practice. This has resulted in, and been exacerbated by, sectoral decision making in the public service and in industry alike. Hence, the newly created Department of Conservation (DOC) has a preservationist mandate (despite its title!) whilst the New Zealand Forestry Corporation manages State plantations principally for financial returns. This simplistic division has a certain administrative and political convenience, but fails to deal with the reality of a complex situation.

## 4.14 Moving-on.

It is now possible to move on to examine the alternative commercial use of the West Coast indigenous forests. Most of them were being undertaken whilst the high level industrial debate and environmental lobbying passed them by. Now, all of a sudden it seems, most of the logging issues have been laid to rest: for the time being at least! What alternatives can Coasters turn to? These are explored in the next chapter.

# CHAPTER 5. ALTERNATIVE ACTIVITIES AND USERS.

## 5.1 Context of Present Alternative Forest-based Activities.

As the above discussion has shown, the last five years has been marked by what can aptly be described as a revolution in government policy, economic and social conditions and in the public service. Few other periods in New Zealand's colonial history can match the breadth and rapidity of these changes, which not only have had a negative effect on industrial forestry, as shown in Chapter 4, but also on most alternative forest-based activities.

It is apparent that smaller scale, potentially environmentally benign alternatives to industrial forestry were not considered in any meaningful way by decision makers. Larger scale projects, epitomised by the Beech Scheme of the 1970's, involved considerable expenditure and effort, which in hindsight would have been better spent on accommodating more sensitive environmental policies. Whilst this is easy to say now, there was considerable inertia in moving in this direction because of past policies and practices, as shown in Chapter 4.

The alternative forest-based users who were surveyed were not in a position to fundamentally change policies: in the main they were passive consumers of policy, even though bureaucrats did sometimes make an effort to contact user groups. The reason for this lack of influence has been alluded to in Chapter 4: they were few in number and had no financial power. Furthermore, although they have been referred to collectively as 'alternative forest-based users' they are not a unified group of individuals. This is partly because some activities are very different, such as beekeeping and deer trapping, and partly because of individualistic behaviour by forest-based users.

The differences and similarities between activities and the people engaged in them will become apparent by an in-depth examination of alternative forest-based industries, to which we turn our attention first. Where appropriate, an overview of the development of these industries is discussed. This provides a context to comment on market structures, changing economic conditions and the West Coasters involved in them.

## 5.2 Coasters and their Alternative Forest-based Industries.

### 5.2.1 Beekeeping.

Prior to the commencement of this research, there was a dearth of information about beekeeping on the West Coast, though its importance and potential was recognised by the Ministry of Agriculture and Fisheries in the 1970's, in connection with the proposed Beech Scheme (MAF, n.d.) and by the Department of Scientific and Industrial Research

(DSIR) in the early 1980's (Science and Technology Assessment Group, 1982). However, little formal attempt was made to assess the strengths and weaknesses of the industry on the West Coast or to analyse economic returns and individual performance. Up until 1988, West Coast beekeepers were periodically visited by a the Ministry of Agriculture and Fisheries (MAF) apiary advisory officer based in Nelson, but as his territory included both the Nelson Bays and West Coast Regions, he had little time to do any research.

The questionnaire survey covered all nineteen commercial beekeepers on the West Coast. They were a relatively older group of forest-based respondents, their median age being 40-49 years, compared with 30-39 years for all alternative forest-based users included in the questionnaire survey. Sixty nine percent were aged 40 and over (compared with 48% for the total forest-based sample and 55% for the total population of the West Coast who were self employed).[1] Almost all were married or remarried (95% compared with 79% for the survey population as a whole) and most had lived on the Coast for a considerable time: 58% for 21 or more years; half of the group having been born there (47%). Beekeepers were thus a very stable group of people.

Relative to other alternative forest-based occupations, beekeeping attracted a higher proportion of women (16% against 6% for the total sample). This figure, however, understates the involvement of women in beekeeping, as it comprises those who had an equal or major working involvement in the enterprise. Many women helped their spouses or partner, as did other members of the family. To some extent this involvement is reflected in the ownership of the enterprise: 63% included spouses and family (see Appendix 4). However, one reason why it may not appeal to more women as a principal occupation is because moving hives and boxes full of honey is a back-breaking job, requiring a lot of strength. (A three-quarter size box of nine frames, full of honey, weighs approximately 40 kg). Work conditions can be tough: these were stated to be the major dislike of the activity (see Appendix 4).

For a region of over 2 million hectares in area and 500 km in length, the number of commercial beekeepers was small, despite the fact that the Coast was perceived to have particular advantages for beekeeping: the most important being the greater amount of resource available (84%) and the longer honey flow (21%). In spite of the disadvantages of wet weather (63% of respondents mentioned this) and physical access associated with the inclement conditions (16% response), the perceived benefits were

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1 West Coast population figures are derived from a special analysis of the 1986 Census of Population and Dwellings, adjusted by one year to coincide with the questionnaire survey. The 'self employed' are defined as being 15 years and over, working full-time or part-time.

not without foundation. In total 277.95 tonnes of honey was produced in the 1986-87 financial year, from 4932 hives. This gave an average of 5.63 tonnes/100 hives in 1986-87, compared with the national average of 2.97 t/100 hives. (The average West Coast yield for the period 1984/5-1986/7 was 4.26 t/100 hives compared with the national average of 3.07 t/100 hives). Thus, the West Coast result is remarkable, bearing in mind that the 'top' yield per 100 hives achieved by one West Coast beekeeper was equivalent to 9.35 tonnes in the 1986/87 season. Furthermore, the average figure covers a range from 87 tonnes in total from one beekeeper to 150 kg from the least productive member of the group.

Rata in bloom, Otira Gorge, Arthur's Pass National Park. January, 1987.

Physical potential is thus a major advantage of beekeeping on the West Coast, although output can vary from year to year depending on the weather and the flowering of the rata. At sea level, one species of rata flowers regularly, but at higher elevations the main species *(Metrosideros umbellata)* only flowers in profusion every four years or so. Other major sources of nectar are kamahi *(Weinmannia racemosa)* and quintinia *(Quintinia acutifolia)*. Only four respondents mentioned beech (*Nothofagus* species) as being important. Beech forests are the habitat of a scale insect which produces honeydew, which is converted by bees into honeydew honey. This honey receives premium prices in Europe. However, much of the West Coast's beech forests are in high rainfall areas which are not favoured by the scale insect, though some areas are drier and offer better prospects.

An indication of production potential of the West Coast can be gauged by comparing actual yields of honey with that achieved by the 'top' producer. If all beekeepers had achieved the 'top' yield of 9.35 t/100, the theoretical potential for 1986-87 would have been 461 tonnes, or 66% more than was actually produced. Whilst not suggesting that this figure could actually be realised, it is indicative of the possibility of greater yields. The actual achievement of this extra production depends on a number of factors, some of which are suggested by an analysis that was undertaken of the relationship between respondents' socio-economic characteristics and their actual yields per hive.

In order to find if there was any relationship between respondents' demographic characteristics and yield per hive, a number of statistical analyses were carried out. It was found that correlations between three demographic variables, years lived on the West Coast, years involved in beekeeping and place of birth with average yield per hive over the period 1985/6-1986/7 were moderate to high (correlation coefficients were 0.70, 0.66 and 0.64 respectively), whilst there was a low correlation with total number of jobs and virtually no correlation between age, qualifications and income dependence with average yield per hive. However, a multivariate technique, multiple regression, was used to analyse the relationship of the set of these variables (a linear combination of the demographic variables) with average yield per hive. This revealed a statistically significant result: that years lived on the West Coast was by far the strongest predictor variable, but there was still a high correlation between place of birth and years involved in beekeeping with average yield per hive (see Appendix 5 for further details). In plain terms, this indicates that those beekeepers who had lived longest on the Coast tended to obtain the highest yields. This does not mean that a long period of residence was the cause of higher yields. It suggests that local knowledge, familiarity and experience (for instance in the determination of the most favourable beehive sites) are factors which merit close attention. However, many beekeepers were building-up their hive numbers whilst being involved in other jobs, so that they can be visualised as being resource manipulators, as conceptualised in Chapter 2. They were only making a slight adjustment to the resource, not spending sufficient time managing their bees to get higher yields. This has important consequences for future resource use and management, as discussed in Chapter 7.

Despite the physical possibility of achieving higher yields, the attainment of this objective is meaningless unless the product can be sold for a price sufficient to cover on-going expenses and capital investment. Unfortunately, beekeeping was not very profitable, so that respondents expressed strong likes for factors other than the financial returns. Thus, the most appreciated facet of beekeeping was the interest and satisfaction it gave (68% mentioned this) and the opportunity it provided for working independently

(42%), in a natural, outdoor setting (32%). The absorbing nature of the activity and the identification with the natural resource and the environment typified beekeepers and made beekeeping distinct from most other alternative forest-based occupations. As a whole, the group was very environmentally conscious, as they were dependent on natural cycles and the maintenance and enhancement of environment conditions for their livelihood. This is discussed in greater detail in Chapter 7.

The enjoyment derived from the activity is reflected in the fact that many commercial beekeepers start as hobbyist, irrespective of the financial returns. Hives can be split each season at no extra cost for bees, except about $10 for a queen. Extra boxes, base and top cost $80-$100, if the wood is bought pre-cut. Hence, ease of establishment was stated to be the most encouraging factor for newcomers (see summary of Encouraging Factors, Appendix 4). However, a sizeable investment is required to give a notional family a full-time living: said to require 700 hives (Matheson and Wallingford, 1988). The majority of West Coast beekeepers were trying to survive on far fewer hives than this (the average was 260 in the 1986/87 season) and not doing too well at that. This high eventual capital investment in hives and equipment, as the production unit is built up, has become a millstone around most beekeepers' necks (discussed below). For, financial returns had been poor: only 11% of beekeepers had a particular like for the economic situation and the financial returns, and this was perceived to be the major reason discouraging newcomers to the activity (78% of respondents said this, see Discouraging Factors, Appendix 4).

In order to get a quantitative indication of the financial state of beekeeping, financial statements were examined in detail, as explained in Chapter 3.[2] In the first analysis, return on sales, beekeepers fared badly. They only achieved a 9.3% return, which was way below that achieved by moss producers and possummers. (This is a measure of the profitability of each sales dollar and is explained in Appendix 6, Financial Analysis). One would normally expect a low return on sales where the turnover rate is high, such as in the grocery trade. But, in beekeeping, sales were slow. The price per kilo of rata/kamahi had fallen from $1.60 per kg. to less than a dollar per kilo. As a result, some beekeepers held on to honey hoping the price would rise and were left at year's end with unsold stock. This is an example of how some beekeepers tried to 'play' the market, epitomised by neo-classical economists as acting "rationally", only to find that

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2 It should be remembered that the analysis is based on financial returns which were prepared for tax purposes for the period between 1984/85-1986/7, in most cases. This was a period of deteriorating economic conditions in New Zealand, when the rural economy was hardest hit by the Government's restructuring and cost-cutting measures. However, not all of the financial problems faced by alternative forest-based users could be attributed to Government policies, as overseas events and market conditions also played a part.

their actions rebounded on them. The price of honey fell instead of increasing in value and as a result many were in a dire financial situation.

The significance of high inventories is highlighted in an analysis of gross profit rates. This is another measure of the profitability of each sales dollar and is an indicator of the 'profit' generated from a sale to cover selling and operating expenses. Beekeepers had an average of $7,151 of inventories (cost of goods sold), which, when computed, gave them a 78.8% gross profit rate, as explained in Appendix 6. Again, this was a comparatively low result, only surpassed in poor performance by craft woodworkers.

Finally, the rate of return on total assets was calculated. This measures how productively total assets were employed and is calculated by expressing net income before tax as a percentage of total assets. It reveals that beekeepers employed considerable assets in relation to the net income they earned. The average value of their assets was $111,089, tied-up in hives, sheds, vehicles and extractors. With a depressed price for honey and high operating expenses, their rate of return on total assets was thus poor: a meagre 2.8%. (This compares very unfavourably with moss producers and possummers, see Appendix 6). Even if their net sales receipts had increased 50%, their rate of return on total assets would only have been 18%, other things being equal.

One of the problems with beekeeping on the West Coast was the price discrimination against the bulk of the region's production, which is a general kamahi/rata mix.[3] Furthermore, the whole honey market has suffered from a flooded world market, mainly because of the removal of price support in the USA. Prices plummeted. This affected most beekeepers on the Coast, as they were reliant on honey alone. Only a few beekeepers manage to process and pack some of their produce, or produce queen bees, and only one offered a pollination service to orchardists, as horticulture is underdeveloped on the Coast. Those that could spread their risks generally fared better than those only producing honey for bulk sale. Two beekeepers in the latter category were caught with unsold stock and one had to restructure his operation drastically and take up a secondary job.

The importance of local knowledge and having strategically located beehive sites is underlined by the fact that running and repairing vehicles involved the greatest relative expense (24% of operating expenses). This was nearly double the next biggest expense: wages (14.8%). The beekeeper who had to restructure his operation and take another job had hives strung out from the Coast along a major river valley all the way to the

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3 In 1985 Airborne Honey Ltd paid 25% less for manufacturing grade honey (which is what mixed floral honeys are classified as) than for top grade clover honey. In 1986 the differential was 12% and in 1987, 16% (Bray, 1988). Rata honey however commands the top price.

Alps, entailing a round trip of at least 160 km. Feed sugar (11.1%), repairs to buildings and hives (9.5%) and interest on capital borrowings (8.8%) were the only other major expenses. However, the average debt (long term liabilities, averaged over three years) was $21,253 for each beekeeper.

As a result of the depressed situation, only 8 beekeepers derived 50% or more of their income from this activity (44% of 18 beekeepers).[4] Those who had the greatest income reliance on beekeeping had a statistically significant tendency to have been born on the West Coast and to have gained few formal qualifications since leaving school. Although these two background variables accounted for most of the variation in the outcome variable (income dependence) a short period of residency on the West Coast was also a factor in high income dependency, but this had a low correlation with the linear set of the background demographic variables (see Appendix 5, Statistical Tests).

With the depressed honey market, assets could not be realised, yet debts had to be serviced with costly loans (at interest rates of over 20% p.a). The position of beekeepers was not encouraging and the market outlook was considered to be little above 'average'. (The mean score was 0.1 to question 15b, see survey questionnaire, Appendix 3. This rating was for a medium to long term view, reflecting to some extent, an expected improvement in the immediate situation).[5] They considered that a moderate degree of adjustment was necessary by their industry to satisfy market requirements (mean score of 3.0, the highest response on this question [Q.16] for all the alternative forest-based activities).[6] There were no significant canonical correlations between respondents demographic variables and their responses to these market variables, indicating that market signals, such as prices and trade information and forecasts, were probably more significant predictors of future expectations. In fact, the market situation has been volatile, with an average 20% increase in returns to beekeepers nationally in 1986, caused by a honey shortage in the northern hemisphere (*New Zealand Herald*, Auckland, 6/6/1986), to the slump in 1987 and back to better prices in 1989 with a national shortage of honey caused by inclement weather. As a result of the shortage, there is not much difference in the price of clover and rata/kamahi honey this season, some buyers paying the same wholesale price of $2.20/kg (Bray,1989). Unfortunately, most beekeepers on the Coast are not able to capitalise on these better conditions in the 1988/89 season, as a wet spring there weakened hives, underlining the effect of natural conditions. The fortunes of most West Coast beekeepers continued to decline. This is

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4 One beekeeper could not answer this question because her books were with her accountant.

5 A five point rating scale was used, with the following assigned scores : -2 to Very Poor, -1 to Poor, 0 to Average, +1 to Good and +2 to Very Good.

6 A six point rating scale was used for Market Adjustment:, from zero for no adjustment to 5 at the other end of the scale indicating the greatest degree of adjustment necessary

borne out by the falling membership of the local beekeepers association. At the time of the survey, there were 12 commercial beekeepers who were members of the West Coast Branch of the New Zealand Beekeepers Association out of 26 members in total (the membership included hobbyists). As of 2 May 1989, there were only seven commercial members out of 19 in total, although two of the former were trying to sell-up, but could not find buyers (Roxburgh, 1989).

Whilst West Coast beekeepers in the latest season suffered from a wet spring, many Canterbury beekeepers had to contend with a corresponding drought (caused by fohn type winds on the eastern side of the Alps). But Canterbury-based hives fared better and one large concern managed to realise high yields by transporting its hives over to the Coast during autumn when conditions were drier over there (Bray, 1989). This interchange of hives is possible for Canterbury producers, but a similar process is not so readily available to West Coast producers, as most sites in Canterbury are already staked-out (mainly on farms for the clover crop).

To underline the disadvantaged position of West Coast beekeepers, they only produced 2.75% of the total New Zealand output of 10,091 tonnes in 1987. Furthermore, they send their bulk honey mainly to Canterbury processors, over whom they have little or no influence. According to the New Zealand Honey Producers' Cooperative in Timaru, West Coast production accounts for approximately 7% of their total throughput. Wilson Neill's subsidiary, Hororata Honey Exports Ltd., processed approximately 60 tonnes, (10-15%) of its total throughput in 1987 (Hartnell, 1988). Airborne Honey Ltd., of Leeston, near Christchurch, processes approximately 100 tonnes per year of West Coast Honey, but this only accounts for approximately 10% of its total throughput (Bray, 1988).

According to these Canterbury processors, West Coast producers need to improve their hive management and produce more honey, and spend more time separating out the specific flora types of honey in order to realise better profits. Notwithstanding, Wilson Neill only markets 15 tonnes of kamahi honey annually on the New Zealand market and reportedly made a loss on 40 tonnes exported to West Germany (Hartnell, 1988). There has been much criticism of the industry's marketing efforts (*The Dominion,* Wellington, 24/7/1987; Tweedale, 1989). The National Beekeepers Association has discussed the need for a marketing strategy but nothing has so far been finalised. Although there is discontent in some quarters, individual members have little influence when issues are raised at the NBA's annual conferences. Small scale producers are outmanoeuvred because of the system of block voting. One vote is allowed for every one hundred

hives. In effect this protects the position of large, well established companies (Young, 1989).

The West Coast beekeepers were thus a small group, most of whom were trying to get established as competent apiarists, but having to contend with difficult environmental and economic conditions over which they had little or no control. They could have benefited from more resource management and financial advice, but this was not forthcoming from the MAF apiary advisory officer, who was eventually moved to the North Island, following 'restructuring' of the Ministry by the Government . All but one of the nine beekeepers included in the financial analysis were unable to interpret their financial statements prepared by their accountants. Although these were required for tax purposes, no profitability ratios or analysis of changing costs had been prepared for beekeepers by their financial advisers.

All-in-all, beekeepers received poor service, and were in no position to pay for extra advice, as required with the new "user-pays" government philosophy. Government withdrawal of advice, albeit spasmodic, and its reliance on market forces to regulate the market and dictate the fortunes of beekeepers is thus leading to a disaster in the industry. The infant industry on the Coast was (and remains) very vulnerable to conditions which it could not control, like that of the U.S. Government's removal of price support for its industry. If there is no buffer to mitigate the effects of detrimental change to the industry, then it will always suffer from boom and bust conditions. Whilst, laissez-faire policy-makers would argue that this is best for the industry, weeding out inefficient operators, this works against the long term future of beekeepers. It makes it almost impossible to build-up the industry to a sufficient size to promote the special honey that the West Coast industry can produce. For, volume and continuity of supply are critical to secure, hold and develop markets. Furthermore, there are wider social and economic benefits of having a permanent workforce of beekeepers, rather than transient producers in an habitual state of economic flux. The services they provide are all too often taken for granted, and if disrupted can prove very costly to other industries, such as horticulture, which itself is struggling to get established in the Buller sub-region, from Westport to Karamea (see Chapter 8).

By having a vested interest in maintaining and enhancing the natural resource, beekeepers provide an added benefit to the Coast, as its economy is becoming more and more dependent on the wise use and management of the land, including the indigenous forest estate. The exploitive practices of the past do not accord with the new thrust of tourism and the policies of the Department of Conservation, which controls

approximately 75% of the land area of the West Coast.[7] Beekeepers have already expressed concern about the effects of browsing animals on indigenous forests and also the indiscriminate cutting of rata for firewood. Although their voices have been drowned-out by more powerful factions and interest groups, they are an ally of resource managers and, ultimately, of all thinking New Zealanders. Their potential and recognition waits to be realised, as discussed further in Chapter 8.

5.2.2 Deer Trapping and Venison Shooting.

From the 1880's, when red deer (*Cervus elaphus scoticus*) were introduced to New Zealand, numbers increased so rapidly that large scale publicly funded culls were necessary in order to protect the indigenous flora. It was only in the 1950's and 1960's that commercial venison markets were developed in Europe for New Zealand venison. Intensive hunting developed, initially on foot or from vehicles and, from the 1960's onwards, by helicopter. Animal numbers were dramatically reduced and, after legislation was introduced in 1969, animals were captured live in increasing numbers to stock deer farms. The number of live deer captured peaked in 1979-80 and has declined since then (Challies, 1985; 1986). Feral deer populations are now low. As farming became established, the number of farmed deer increased dramatically. (In 1978/79 there were 42,080 farmed deer in New Zealand; 722 on the West Coast. By 1987, there were 500,397 nationally; 11,210 on the Coast). Animals have been farmed for venison rather than for velvet, as the world demand for the latter is low (55-60 tonnes) with New Zealand supplying 15-20 tonnes in 1985 (*Farm Equipment News*, 19/8/1985).

In the early days of the farming industry, herds were being built up and there was a demand for both feral hinds and stags. Requirements then became more particular. Hinds were retained for breeding whilst stags were usually shot for venison (Challies, 1986), though, of late, feral hinds have also been shot for venison (see below). Historically, the West Coast was a cheap source of feral deer, but with the advent of deer farming, the significance of feral deer has declined and those involved in deer trapping and shooting are becoming a declining minority.

All the deer trappers included in the survey population were males. They tended to be younger members of the survey population (mean age 30-39) who were born predominantly on the West Coast (74%). Nearly half had no formal qualifications since leaving school, which was similar to the total alternative forest-based survey population.

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7 This figure is DOC's estimate. Due to the discrepancy in the estimated size of the West Coast Region mentioned in Chapter 1, the West Coast United Council contends that the Department of Conservation controls approximately 85% of the West Coast. This larger figure is politically convenient to the WCUC, as DOC is identified with "locking-up" resources for development.

They were not necessarily loners, as only a minority liked the activity for the independence and solitude it afforded (26%). In fact, just half of the sample had a sole financial stake in their activity (49%). The remaining owners were split between members of the family and other persons (see summary of Principal Owners, Appendix 4). The proportion involved in joint ventures with people outside the family (29%) was highest amongst deer trappers than amongst other alternative forest-based users. One reason for this is that the help of friends is especially useful when tranquillising and transporting deer from pens in the forest to holding paddocks. Feral animals once trapped become very agitated and there is apparently a lively time trying to subdue animals and prevent them from charging the wire fences. Some respondents report animal losses as high as 50% from broken necks or backs.

Deer trapping was liked for a wide range of different reasons, (see Appendix 4). The most frequently mentioned aspect was the financial returns (34%) though this was still liked by a minority of those interviewed. A high proportion had no particular dislikes (57%) indicating that deer trappers derived a great deal of satisfaction from their activity, even though financial returns had been falling (discussed below). Respondents considered that the major advantage of deer trapping on the Coast was derived from the abundant habitat (37% of the 35 respondents mentioned this) and resource numbers (31%). Nevertheless, they trapped only 523 deer in 1987. Twenty nine percent said there were no particular disadvantages of trapping on the Coast. The only significant disadvantages cited were the weather (9%),[peak trapping periods are from Spring to Autumn, when rainfall tends to be heaviest on the Coast] fewer and smaller deer (9%) and disease i.e. Tb (9%). The latter is a particular problem on the West Coast, where tuberculous possums (*Trichosurus vulpecula*) have been found associated with a persistent tuberculosis problem in cattle herds.[8]

Despite the perceived natural advantages, the viability of deer trapping is now marginal. Seventy one percent considered that nothing would encourage newcomers to their activity: 66% saying that the financial returns would discourage them (See Encouraging and Discouraging Factors, Appendix 4). Only one respondent relied on this activity for 50% or more of his income, whilst another three for 25-49% of their incomes. This is primarily because of the advent of deer farming and recent tax changes. Domesticated stock are now relatively abundant and are quieter, more productive and less exposed to

8 The West Coast had the highest relative incidence of tuberculosis in cattle and the greatest risk that cattle would become reactors in 1986/87 (Livingstone, 1988). A voluntary scheme to give farmed deer an accredited tuberculosis-free status was introduced in 1985, administered by the Ministry of Agriculture and Fisheries (MAF). Deer farms in which Tb is diagnosed are placed under a disease control place notice to minimise the movement of infected deer from the farm (Carter, 1988). Tb testing is now compulsory. As soon as feral deer are caught, they must be tested and kept separate from

disease. One large scale deer farming and investment company claimed that it is was cheaper to buy weaners in Auckland than to buy feral deer on the Coast.[9] Though this may be an exaggeration, it reflects the fact that farmed deer are now available at lower prices than previously. This has occurred since the introduction on 1 April 1987 of a new livestock tax. This is levied on the difference between the value of stock at the end of the financial year as assessed by the Inland Revenue Department, compared with the brought in value and is paid irrespective of whether the stock is disposed of or not. In other words, it is a tax on the capital value of deer. This has discouraged speculative investment in the deer farming industry, which inflated the price of stock. However, the tax is an advantage to farmers who are building up herds, as the price of stock has declined.

This depressed the feral deer industry. Those who took part in the survey rated the market outlook as 'average to poor' (mean score of -0.4). No significant canonical correlations were found between demographic variables (years involved in the activity, years resident on the West Coast, qualifications, jobs and income reliance) with the market variables (concern about continued availability of resource, advise sought, market outlook, whether any adjustment was necessary to satisfy market requirements and whether respondents planned to continue their activity). As with beekeepers, this suggests that financial factors had a more important influence on respondents' views of the future and on what they planned to do. Nine helicopter operators, interviewed as a separate group, were even more pessimistic. Their mean score was -0.9, i.e. rating market outlook close to 'poor'.

The eight venison shooters, who were all males, tended to be younger than deer trappers (38% were in there twenties against 11% of deer trappers in this age category). They were predominantly born off the West Coast (63%) and tended to relish their freedom more than the deer trappers did: 38% liked the independence and solitude of venison shooting and three quarters of them were sole owner-operators.

They shot 458 animals in 1987. Only one shooter was air-borne, the rest hunted on foot. The latter planned to continue their activities, but the former was uncertain. Increasing costs and reduced returns from this and most other forest-based activities made the air-borne shooter unsure about continuing because of doubts that the helicopter he flew in would be operating. The problem is that venison shooting, like deer trapping, has been affected by the availability of farmed stock. Figures from a deer

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farmed animals. It takes 72 hours to get a result of a test; if positive, the infected animal must be slaughtered (Wells, 1988).

9 The company has since gone bankrupt.

processing works in Hokitika illustrate the increase in the relative number of farmed deer slaughtered and the relative decline in significance of feral venison. These are shown in Table 5.1, below.

Table 5.1. Feral and Farmed Red Deer Processed at Hokitika.

| | March Years | | | |
|---|---|---|---|---|
| | 1984-85 | 1985-86 | 1986-87 | 1987-88 |
| Total red deer = | 6441 (100%) | 6486 (100%) | 6951 (100%) | 8829 (100%) |
| Feral | 3920 (61%) | 4066 (63%) | 3515 (51%) | 3956 (45%) |
| Farmed | 2521 (39%) | 2420 (37%) | 3436 (49%) | 4873 (55%) |

Source: Westland Frozen Products Ltd., Hokitika.

In March 1988, 382 feral deer were processed at Westland Frozen Products which was slightly higher than the average monthly figure for the year. (This however is nowhere near the peak of about 1600 feral deer processed each month at the works in 1979/80) The recent increase in average throughput was due to the slaughter of feral hinds, as on-farm demand declined. This trend continued during the rest of 1988, despite a $2.50 per kilo differential between top-grade feral and top-grade farmed venison [$3.90/kg compared with $6.40/kg respectively in November 1988] (Rooney, 1988). The switch from live capture to shooting for venison is corroborated by Wallis (1989), the Managing Director of the Alpine Deer Group, who reported that his company had changed from a year round operation to a seasonal one.

Seasonality has not only been dictated by the market, but is part of the natural cycle of animal behaviour: animals congregate and are more amenable to capture or slaughter in the months leading up to the roar in autumn. This is when hunters, shooters and deer trappers are most active. Over the winter months there is a lull in activity and from May to September little venison shooting takes place (the implications of this are discussed further in Chapter 7). The viability of shooting was also affected by the relatively low frequency of feral animals in the bush, compared with the situation a decade ago. Though animal numbers are now increasing, the airborne shooter expressed disdain for DOC resource managers who had suspected him and his pilot of poaching deer from a closed area. He explained, with some bravado, that it was necessary to act illegally because the operation was so marginal! This attitude has plagued the industry in the past and has led to armed confrontations and sabotage of helicopters, as operators fought battles over access to the resource.

Apart from the low number of deer shooters in the questionnaire survey, only five helicopter operators were found to be engaged in this activity. Their market outlook was similar to that of the deer trappers (-0.6). 75% of them thought that nothing would encourage newcomers, primarily because of the financial situation. Recreation and enjoyment were the only aspects which were thought likely to encourage newcomers (25%).

It was to be expected that with such a dramatic growth rate in the deer farming industry, problems would be encountered. As recently as 1985 there were reports that the development of overseas markets for venison was difficult because of the wildly fluctuating domestic production (*National Business Review* [NBR], 2/9/1985: p.39). Very sophisticated marketing was noted as being needed. New Zealand's largest single market, West Germany, accounted for 29% of total deer exports by value (but 56% of venison exports) in 1985 and New Zealand supplied 10% of the venison eaten there (*New Zealand Meat Producer*, January-March 1987: 16-18). It was claimed that this market really required wild venison (*NBR*, 2/9/1985: p.45), though it was not publicly acknowledged that New Zealand venison was farmed. Also, in West Germany, venison was never identified by its country of origin, as it was sold on the wholesale market. Hence, after the Chernobyl nuclear accident in April 1986, the West German market was disrupted when local consumers boycotted what they thought was radio-active, feral meat of European origin. This was not altogether disastrous for New Zealand deer exports, as trade with the U.S. and Japan increased. But, it prompted the Game Industry Board[10] to pay more attention to differentiating the New Zealand product. It initiated a four year campaign "to reposition New Zealand farmed venison as a branded product at the top of the West German market". The Board planned to turn the perceived differences between farmed and feral deer in New Zealand's favour by promoting the farmed product as "one which offered quality, appearance and supply, which the feral product inherently cannot" (*NBR*, 10/10/1986. p.27). In 1987 the Game Industry Board announced its intention to develop a quality logo seal and launch farmed venison as a branded product (*New Zealand Meat Producer*, January-March 1987: 16-18).

The increase in farm numbers, coupled with the Game Industry Board's strategy and the Government's announcement of a change to the tax regime, all boded ill for the feral industry. Following the tax changes and uncertainty whilst adjustments were made, prices of farmed red deer hinds tumbled from around $3,000-$4,000 to $1,000-$1,200 (*New Zealand Herald,* Auckland, 25/11/1986, Section 3:12). Investment in deer

10 Set up to market and promote deer products

declined. The New Zealand Deer Report's deer price index stood at 671.83 in September 1987, compared with 1263 in the previous January and 2,214.58 in November 1985 (NBR, 10/9/1987, p.7). Feral stags were only fetching $200-$300 each and hinds $400-$600. Yet a $500/trap bond was being required by DOC as a surety for the removal of a traps, if the operation ceased. Thus, it hardly paid trappers to continue their operations, except for those lucky enough to have deer pens close or adjacent to farms.

Deer trappers and venison shooters have provided an invaluable resource management service in that they have helped keep feral animal numbers under control. They have thus helped maintain and enhance the indigenous biota, the condition of which is critical to future social and economic development. But, this service is now threatened. Whilst feral deer numbers have been kept low for a number of years, the natural vegetation has improved and animals are now in relatively good breeding condition. Unless hunting pressure increases significantly, a population explosion could result, to the detriment of floral values (Challies, 1986). But, the reliance on the 'free' market makes it impossible to rely on commercial operators to control feral animal numbers. The implications of this, for the industry and for policy makers, are taken up in Chapters 7 and 8.

### 5.2.3 Goat Capture.

Goats have long been recognised as complementary stock to sheep and useful for keeping weeds down, especially when the government phased out subsidies on herbicides. However, the seemingly insatiable demand for goat fibre spurred investment in this emerging industry. Three types of fibre can be produced in New Zealand:

i) mohair, which is a coarse fibre produced by angora goats, yielding up to 3.5 kg/year per animal;

ii) cashmere, a super-fine fibre ideally of 15-19 microns, generally derived from any goat that has two coats, one to guard the underdown. Cahmere goats do not require the special farming techniques of angora goats and are used to rough hill country grazing; and

iii) cashgora, an intermediate fibre of 19-23 microns, between cashmere and mohair, derived generally from the crossing of an angora buck and a feral doe.

Cashmere, at $170/kg, realised nine times more than mohair ($18/kg) in November 1986 (*Auckland Business*, November, 1986). Cashgora realised $20/kg in 1985 but

was thought likely to ease to $15/kg in 1986 (*NBR*, 16/9/85, p.40). The bulk of the cashgora production was pre-sold to Europe for 4-5 years.

Demand for mohair increased strongly in the 1970's, with prices rising then falling back in 1973-74, rising again but declining in 1976-77 and finally peaking in 1978 and 1979. Since then, the price trend has been downwards, interrupted by a rally in prices in 1983 and 1984. The fluctuations in prices are attributed to the luxury nature of mohair: demand being largely subject to changes in fashion. Forecasts are unclear, as there are a lot of uncertain factors. Despite varying scenarios, mohair prices are expected to be lower, either because of rising world production and/or because the development of new technology. This will enable the development of fine wools with some of the qualities and lustre of mohair (Blake and Wallace, 1987).

World cashmere production was 10,000 tonnes in 1978, but by 1986 it was down to 8000 tonnes, as the main world producer, China, was processing more of its own fibre and two of the other main producers, Iran and Afghanistan were fighting wars. Supply cuts from these countries produced a four year price boom which peaked in 1984, as buyer resistance set in (Blake and Wallace, 1987).

As with deer farming, taxes concessions, derived from investing in a new and potentially lucrative activity, attracted considerable investment by companies. Demand from the major British importer kept interest up. Dowson's reportedly wanted 1000 tonnes of cashmere annually, whilst New Zealand was only producing 4.5 tonnes and Australia 14 tonnes per year (*NBR*, 21/2/1986). For the year ending June 1986, New Zealand cashmere production had reached 28 tonnes and was forecast to be around 200 tonnes in 1990/91 and 1000 tonnes by 1995/96. But, no significant change in real price was forecast for the period 1986-1990 and steady increases in the world supply of cashmere was forecast to result in lower real prices between 1990-1996 (Blake and Wallace, 1987). Notwithstanding, tax changes to prevent tax avoidance by investors and the stock market crash in 1987 ended the rally of interest. Companies went bankrupt. Although goat numbers were still rising, there was a thirteen-fold fall in the price of purebred goats and ten fold drop in feral and crossbred prices between 1985-1987 (*NBR*, 19/11/1987, p.7).

Furthermore, too many investors and farmers got carried away by the high price of good white cashmere (at $150/kg or higher in 1987) losing sight of the fact that the annual return might be only $10-$15 an animal (*NBR*, 6/2/1987, p.27). Thus, the emphasis has changed to selective breeding, as up to 100 grams of cashmere per goat is possible. The best goats can produce 200-250 grams per year and the challenge is to raise this to

500 grams. Thousands of goats were imported to improve local strains (15,000 in 1986, according to *The Dominion*, Wellington, 24/7/1987, p.16). The need for the industry to pay closer attention to quality was reinforced by the Ministry of Agriculture and Fisheries, which stressed that the emphasis needed to shift from expanding stock numbers to concentrating on quality ,i.e. farm bred, lines (*The Press*, Christchurch, 29/1/1988).

Given the initial high hopes but subsequent crash in prices, it is not surprising that only one helicopter operator interviewed was involved in goat recovery at the time of the survey, and only 5 goat catchers were encountered and included in the questionnaire survey. None of the latter saw encouragement in the financial returns, but rather derived satisfaction from 'doing their own thing' in the outdoor forest environment. Four out of the five thought nothing would encourage newcomers, predominantly because the financial returns were poor. Market outlook was also perceived to be poor and little was thought possible to satisfy market requirements.

Goat catchers, like deer trappers and venison shooters have proved useful in keeping feral animal numbers under control, but, again, their services are now threatened by low market prices. They have made a contribution to the economy by facilitating the establishment of a new farming industry. But, now, their operations are seemingly dispensable if the invisible hand of the market is allowed free reign. This puts land managers in a dilemma. How are animals to be controlled when budgets are tight and, in fact, being reduced?

### 5.2.4 Possumming.

Australian brushtail possums (*Trichosurus vulpecula* Kerr) were first introduced to New Zealand around 1840 to establish a fur industry. They multiplied and spread and were eventually declared a 'noxious animal' in 1947. Widespread possum control was attempted with little success, but from the early 1970's the nominal value of skins increased. Over 95% of the skins are sold overseas, with exports reaching a peak value of $23.37 million in the year ending June 1980. Attitudes towards possums as a source of income changed over this period. The 'noxious animal' status was removed and captive rearing was permitted following changes to legislation in 1977 (Clout and Barlow, 1982). But although this industry has been perceived to have increased potential, with prospects of marketing the fur to the higher end of the fashion market and selling the meat to the Asian market, overseas demand for quality skins has been weak. In real terms, export receipts have in fact declined and new market niches have not been secured.

Possumming is mainly a winter activity and animals are caught both by casual and professional hunters, using gin traps and/or cyanide poison. No licence is required to use traps and as there are low establishment costs and few fixed assets involved, the number of hunters fluctuates. In 1987, at the time of the questionnaire survey, 47 resident possummers were located on the West Coast. All but one were men. The woman was from Waiatoto, south of Haast, who had just had her first season hunting. (She did not intend continuing her activity because of a poor catch and the rejection of her skins, due to poor preparation). As one would expect, most possummers (57%) had obtained no formal qualifications since leaving school (compared with 47% for all those included in the questionnaire survey).

Many respondents reported starting the activity very young, some whilst still at school. Although the median age of hunters was 30-39, this was still a more youthful group than some others studied (15% were under 30 compared with 9% in this age category in the total sample of alternative forest-based respondents). This probably accounts for the fact that there was a higher proportion of possummers who had never married than in the total sample (21% compared with 14%). This was the same proportion as the total alternative forest-based sample and similar to that found in the working population at the 1986 Census (7% of those gainfully employed).

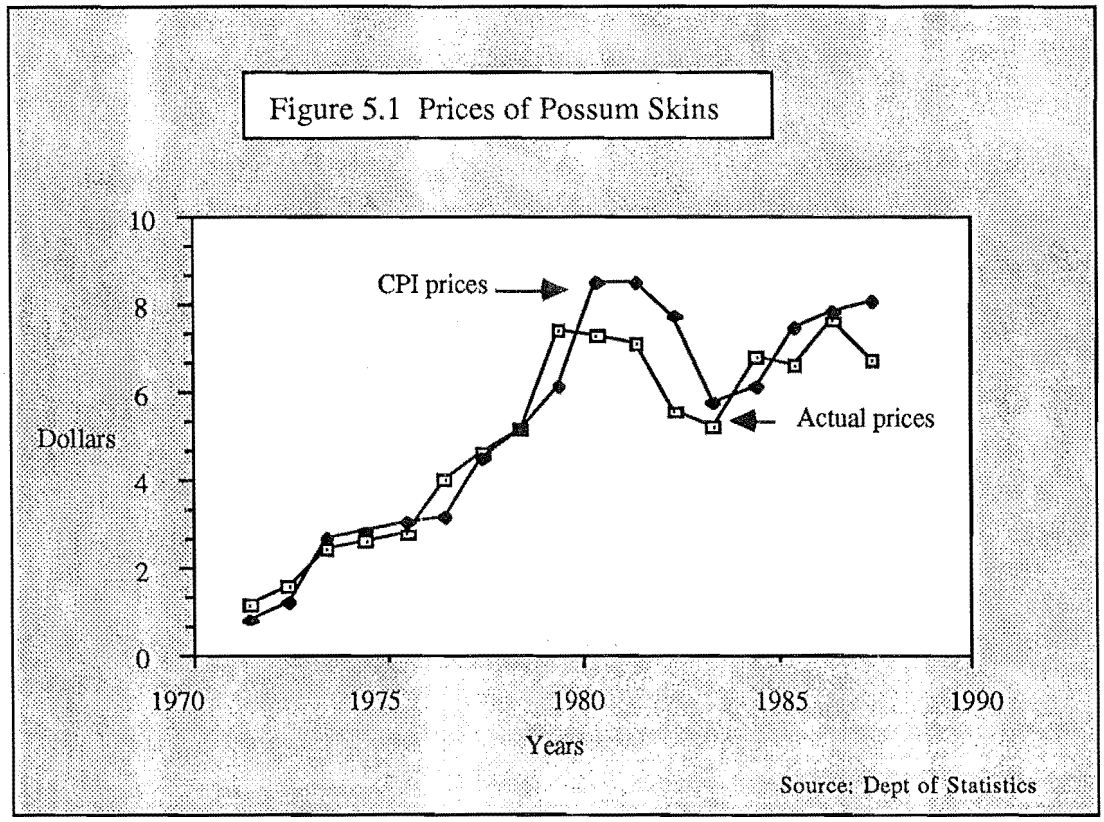
Nearly half the sample strongly identified with the forest environment and the outdoor life (49%) and particularly liked possumming for the solitude and independence it offered (47%). The activity could be pursued alone with little difficulty, as it was not a back-breaking task like beekeeping and did not require the help of friends as deer trapping did. Thus 64% of possummers were the principal owners of their operation (see Appendix 4). Forty three percent had no particular dislike of the activity: the weather being the only major dislike (23%). The unemployment situation and the prospect of making some money from possumming were the only major factors thought likely to attract newcomers, though 47% said that nothing would encourage them. The poor financial rewards were perceived to be the main discouraging factor for newcomers, followed by the work conditions associated with skinning and preparing pelts.

The depressed economic conditions in the possum industry were reflected in the fact that only 28% of those surveyed derived at least 50% of their income from this activity (i.e. 13 possummers); only 9% derived 75% or more of their income from possumming (i.e. four people). In a two-way correlation analysis between the demographic variables and income dependency (age, place of birth, years lived on the West Coast, years involved in possumming, qualifications, total jobs and income reliance on possumming), the

highest correlation achieved was weak (-0.35) between total jobs and income dependence. The other correlations were close to zero, indicating little or no relationship. However, a multiple regression of the linear set of these background variables with income dependence, revealed a statistically significant tendency for those who had many jobs or sources of income and who had lived on the Coast for a moderate period of time, but who tended not to be Coasters, to have a low dependence on possumming (see Appendix 5). This inverse relationship between most of the demographic variables and income dependence is, in hindsight, not unexpected and tends to support the contention that it is Coasters, born and bred, with years of involvement and relatively few other jobs who are likely to be dependent on this activity.

Although a moderate degree of skill was thought necessary to catch and prepare skins (the average score was 3.76 on a six point scale from zero for no skill to 5 for a lot of skill) these skills were not considered to be in short supply on the Coast (87% of the sample stated that finding people with these skills on the Coast was not difficult). This is because many people have been involved in possumming in the past and tend to have a casual interest in the activity.

The average number of possums taken by those surveyed was only 1273 in 1986-87, increasing marginally from 1111 the year before and from 1056 in 1984-85. (The maximum kill by an individual was 6000 in 1986-87). Major issues have been the cyclical change in demand, and the fact that prices have not kept pace with inflation. This is shown graphically in Figure 5.1, overleaf. Actual export prices per skin are graphed and compared with those which would have been realised if prices had kept pace with the increase in the consumer price index (all groups). As can be seen, the occasions when actual prices were higher than those necessary to keep pace with inflation were rare.




The differences in the the above prices can themselves be graphed, as shown in Figure 5.2, below:

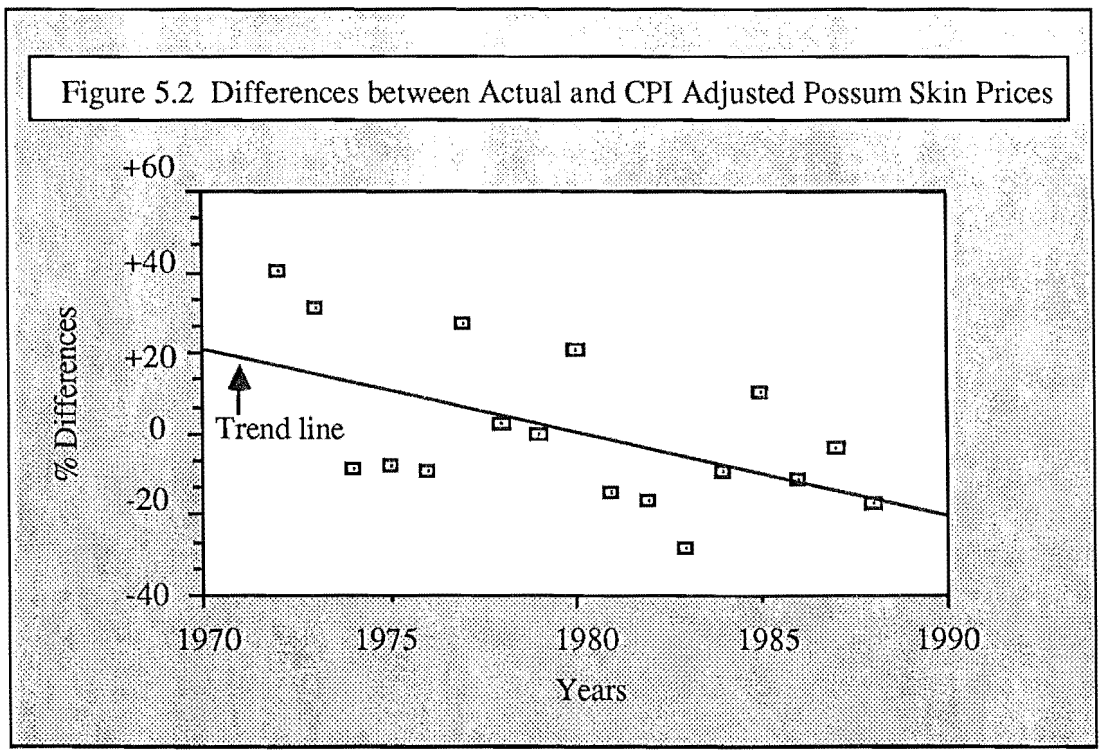



Figure 5.2, above, highlights the fluctuations and shows the general downward drift in real prices (the negative points on the graph occur when actual export prices per skin are

less than they would have been if prices had kept pace with inflation).[11] A regression analysis was carried out on the data. The line which best represents the linear trend of the data is shown by the trend line. However, since the $R^2$ value is only 0.294, the regression does not explain a lot of the variance in the dependent variable (difference in prices) and the result is not significant at the 95% level. However, the downward trend line is of interest, not the ability to predict future prices. Export prices follow no predetermined trend: future prices do not depend on time. Possum fur might become more fashionable due to successful marketing, raising its value: on the other hand, there might be increasing resistance to the use of animal fur, depressing demand and lowering values. (Coincidentally, prices have in fact followed the trend line downward in the last year, 1988-89).

Nevertheless, the point of the above exercise is to demonstrate what has happened before, during and since the questionnaire survey in order to account for the negative comments about the commercial state of possumming. Respondents rated the market outlook as 'average' (mean score of 0.3 on a scale from -2 [very poor] to +2 [very good]). The helicopter operators questioned also rated the market outlook as average (score 0.0). However, only a slight degree of adjustment was thought possible to satisfy market requirements (mean score of 2.0 on a scale from zero for no adjustment to 5 for a great deal of adjustment). By far the greatest need was to improve the quality of skins (30% mentioned this) and for the industry to improve the marketing of possum fur (20% mentioned this). However, the next most mentioned need was to control buyers (11%), which reveals a concern over the way in which possums skins are sold and the dominance of one country over which sellers have no influence. The main trader in skins is Wrightson-Dalgety Ltd who receive, grade and auction skins. 1.2 million skins were auctioned in the year ending June 1987, approximately four percent of which came from the West Coast (Charlton, 1988). In comparison, the total number of skins

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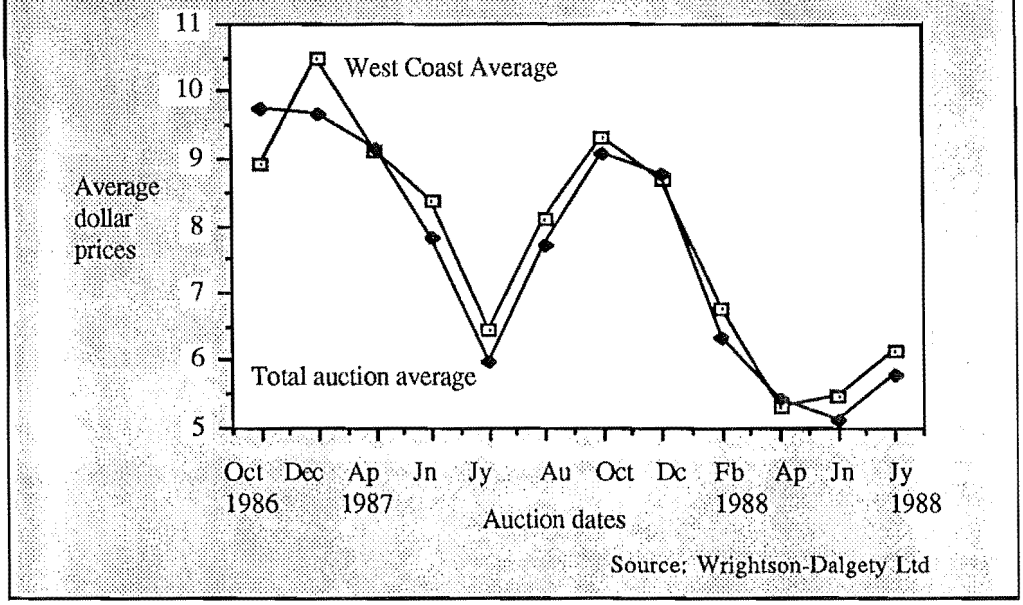
11 The increase in catch by those surveyed between 1984/85-1986/87, despite the downward trend in real skin values, contradicts the conclusions reached by Batchelor (Batchelor, 1988) who confirmed earlier work by Keber which purported to indicate that: " as prices go higher, more people enter the trade and the core of professionals trap harder". Batchelor obtained a correlation of 0.92 between skins exported and average value per skin and stated that this confirmed the inference of Keber's result. However, this correlation was between skins exported and values realised at the same period of time. But, this tells us nothing about possummers' effort for a number of reasons. If prices had an effect on effort, one would expect there to be a lagged effect. Batchelor's indices do not show this. Furthermore, skins exported in one period are not necessarily caught in the same period, as sales also lag the taking of skins. This lag has progressively got worse in the last two years. Effort can be great, but market dominance by a few buyers can depress prices, as has been the case. One might be able to tentatively hypothesise that newcomers or casual operators are influenced by the prevailing market prices, but one cannot say that prices affect the amount of effort expended by those committed to possumming. In fact, one would expect the opposite result to that contended by Keber and Batchelor. As prices fall, those who are trying to make a living from this activity would have to kill more possums to keep financially viable. And this is what the survey results tend to support. Evidently, possummers had not reached the threshold where the activity was completely uneconomic for them to continue.

exported from New Zealand in that year was 2,478,142. Exports to Korea accounted for 78.6% of total exports, followed by the Federal Republic of Germany (6.3%) and the USA (5.2%).

The total number of skins produced by those included in the questionnaire survey was only 50,905 in the year ended March 1987, but this could be a half to a third of the total.[12] West Coast possummers thus produce an insignificant proportion of total exports (remembering that approximately 95% of all possum skins produced are exported). Furthermore, West Coasters only realised slightly higher sales prices than average at the Dunedin auction, as shown in Figure 5.3, below.[13]

Figure 5.3 Unadjusted Auction Prices of Possum Skins




Thus, although local producers could improve the presentation of their skins and thus obtain higher grades and prices, there appears to be no outstanding price advantage from trapping on the Coast and there is nothing individual possummers can do to offset the dominance of Korea and its preference for lower quality, cheaper skins.

12 It is difficult to calculate how many skins were actually derived from the West Coast during this period as records are incomplete and based on different periods. Estimates based on figures from Wilson Neill, Taimex Trading, the Fur Trading Post, Country Traders, New Zealand Fur Auctions and Wrightson Dalgety, indicate that at least 125,000 skins were bought by these companies, possibly rising to 170,000 if a proportion of Canterbury/West Coast figures are included, as the latter was formerly counted as one region by Wrightson Dalgety until October 1986.

13 The data are limited to observations from October 1986 (when West Coast skins were separated out from the Canterbury/West Coast total) to July 1988.

The price of skins has continued to fall in the last two years. The average price of skins sold at auction in Dunedin in May 1989 was approximately $4.75, when better grades of skin, held over from a previous auction, were excluded (Charlton, 1989). Sales have been difficult. At the November auction only half the skins were sold. The February auction was closed as few buyers turned up, but some skins were sold later by private treaty. The April auction was cancelled and carried over to May, thus eliminating the usual June auction. Some skins thus took six months to clear, and although Wrightson-Dalgety's policy for the last five years has been to withdraw skins which did not meet a reserve price, the last year's sales have been unprecedented. Usually, withdrawn skins are sold at the following auction, delayed by only six to seven weeks. Apparently, anti-fur campaigns in the northern hemisphere and a mild winter affected sales. This depressed the value of all grades of fur. Possum furs, which trade in the lower end of the market, had to compete with better quality furs from farmed animals, such as those of mink, which suffered a 30-40% decline in price (Charlton, 1989).[14]

Attempts have been made to farm possums (cage-finishing). One respondent was doing this at the time of the survey, but has since ceased. His average gross return was $17.50 per skin in 1986-87, but the cost involved in keeping the animals in cages for three months was $6.20 (for feed and wages). This left a net profit of $11.30. The following year, 1987-88, the gross return per skin had fallen to $14, whilst costs were at least the same, leaving a profit of $7.80. The operation was evidently not worth the time and effort, as the average price of an 'unfinished' skin averaged $5.40 gross and about $4.40 net of expenses (Mercer, 1988). A listed North Island company, Kiwi Bear Co. Ltd., based at Reparoa planned to produce meat and pelts. Possums were trapped from a nearby forest and pelts improved by cage-finishing for six to eight weeks (*The Press*, Christchurch, 26/9/1987). However, two years later the company was wound-up. The reasons given for the failure of the company were that too little was known about the behaviour of the wild possum in captivity for the cage-finishing process to be commercially viable. The lower grade pelts were sold at depressed prices, but the better quality skins did not sell at a Danish fur auction, in common with most of the other wild furs on offer (*The Press*, Christchurch, 13/4/1989).

Despite the long term fall in the real value of skins and, in the last decade, the failure of prices to keep pace with inflation, possumming has been comparatively profitable. This emerged from an analysis of financial statements. The first profitability ratio calculated shows that return on sales was higher for possummers, compared with the other groups analysed. For each sales dollar they earned 73.9 cents (see Appendix 6). As

14 There was a world production of nearly 33 million mink and 6 million fox furs from farmed animals in 1986/87 (Batchelor, 1988).

possummers carried no inventories, their gross profit rate was 100%. This reflects the fact that for the period of analysis (1984/5-1986/87) all possum skins were cleared within six weeks at auction, where they were usually consigned. As explained above, this situation is now different. Finally, the rate of return on total assets achieved by possummers was also relatively high, as total assets required to undertake possumming are not very great. Basically, a vehicle, traps or poison and boards to peg out skins are all that is required. This is why it is relatively easy to enter and leave the activity, although the use of a helicopter is necessary to access high country possums. However, as average catches were not very high, it was difficult to make a full-time living from this activity, albeit that lower quality skins had been in demand.

Possums skins at Wrightson-Dalgety Ltd's auction floor, Dunedin.

With falling prices and the lack of commercial viability from cage-finishing, the only option left to possummers is to continue to improve the presentation of their skins and and to streamline their operations to reduce costs. However, options are limited as possummers are dependent on what nature happens to provide. There has already been evidence that the proportion of small skins sold at Wrightson-Dalgety's auction has been

increasing (Clout and Barlow, 1982). This makes the viability of trapping more difficult. The trapper cannot afford to be selective, so he takes what he can, even during the mating season when the fur is damaged (discussed in greater detail in Chapter 7). As far as costs are concerned, the possummer is in a cleft stick, as the easily accessible animals have been caught. Thus the trapper has to go further and further afield to ensure a high kill. It is no coincidence, therefore, that the greatest single expense was found to be motor fuel and vehicle maintenance (51% average for those who were included in the financial analysis) and the use of a helicopter to drop and recover the possummer into and out of remote areas (10% of expenses).

The relatively high transport costs of this activity fit in with the findings of Rose, Pekelharing and Platt (1988) who show that the greatest browsing damage is occurring at the heads of valleys, i.e. towards the inaccessible mountains of the Southern Alps, east of main areas of human settlement. Damage to the forest canopy is also particularly high in the southern part of the region, as possums invade the southern part of South Westland. This is another remote area, between the Fox and Haast rivers. Although the implications of this browsing damage are explained in greater detail in Chapter 8, we can reflect here on the effect of this frequency and incidence of possums on trappers' willingness to pursue their quarry. The remoteness of areas of high possum density discourages all but the most dedicated possummer. In order to trap in these areas, he often has to be airlifted in and out, and spend perhaps three months in makeshift huts, under inclement weather conditions. Human nature being what it is, most possummers probably try to trap in accessible areas closest to home, i.e. in the frontal ranges, where possum densities have already been reduced and where the open-block management system makes trapping a free-for-all. Thus, average catches were not high and profits, although comparatively high, were insufficient.

There may be many people dabbling in possum trapping for the fun of the chase, boosting the number of poorly presented skins. Prices are now low, and there are fewer full-timers too. There are less than ten of them on the Coast today, and only 14 possummers who bother to belong to the West Coast branch of the New Zealand Possum Fur Producers Association (Mercer, 1989). Their possumming operations are now marginal: so marginal in fact that one of the best known possummers has taken to training job seekers on the Government's Access Scheme - not really in the expectation that these recruits will take up possumming, but to ensure that he has a regular income!

Possumming represents a classic example of how laissez-faire management and market conditions work against the best interests of possummers and resource managers. Profit rates may be high, but if individuals cannot get access to sufficient animals, because of

physical conditions or design, they will be discouraged and eventually drop out of the industry altogether, especially if the price of skins continues to fall too. Whilst they may take up the activity again when prices improve or animal numbers increase, the fluctuation in the number of trappers makes it impossible to rely on them to control animals without some incentives when conditions are tough. (These incentives are discussed in Chapter 8).

The demise of possummers and their industry has grave implications for future economic and social development on the West Coast, as animal populations build-up again if harvesting pressure is relaxed. Even where publicly funded, targeted poisoning operations have been carried out, animal numbers return to pre-poisoning levels in approximately ten years. The present damage to the indigenous forests of the West Coast has been immense and threatens the potential of the beekeeping industry and tourism, not to mention the effect on the recreational and aesthetic enjoyment of the forest. Furthermore, an uncontrolled increase in possums increases the risk of tuberculosis and is thus a threat to dairying, cattle and deer farming. This will become evident in Chapter 8.

### 5.2.5 Craft Woodworking.

There has been talk for many years about the need to add value to indigenous timbers, but apart from the concentration on large scale, industrial production and utilisation of timber (discussed in Chapter 4), there have been few in-depth studies of woodworkers. It was twenty five years after the West Coast Committee of Inquiry that Houghton and Caskey completed a study in 1985 for the New Zealand Forest Service, but this mainly provided an overview of the prospects for small woodworking industries, comprising six joinery firms and seven craft firms. There is little in this study about the special nature of craft woodworkers, except a statement that craft woodworkers: "are an extremely independent breed of small businessmen and pursue their work as a way of life" (Houghton and Caskey, 1985).

The questionnaire survey was narrower in scope than the Houghton and Caskey study, being solely concerned with craft production, excluding joinery. In total, 8 woodworkers were interviewed. All but one were men. The median age was higher than the alternative forest-based sample as a whole, being 40-49 years. Not one was born on the West Coast; five (62.5%) were born overseas. Seven (87.5%) had some formal training since leaving school. Half of them had been involved in woodworking for less than 10 years, (25% for less than 5 years). The remaining four respondents had

been involved for 15 years or more. Thus this was a very different group of people to the alternative forest-based users surveyed.

They had a comparatively high preference for working independently, which, at face value, seems to confirm Houghton and Caskey's (1985) findings (see Appendix 4). However, 50% of craft woodworkers are part owners of their activity with their spouse and a quarter of them especially liked their activity as they could be with their family, which throws doubts on Houghton and Caskey's statement. This is discussed below.

They derived a great deal of intrinsic satisfaction from their work (68% mentioned this) and thought that this, more than any other factor, would encourage newcomers to their occupation (see Encouraging Factors, Appendix 4). This result supports that of Houghton and Caskey (1985): craft woodworkers pursue their activity as a way of life. None had a spontaneous preference for the monetary rewards because these were low, as will become obvious when we discuss their profitability ratios, below. The importance of non-monetary values as a reason for continued residence on the West Coast, even though financial rewards are meagre, is discussed in Chapter 6.

There were some commercial advantages, though, of working on the West Coast. Fifty seven percent mentioned that the particular advantage was the relative abundance of and accessibility to indigenous timber. The species preferred were rimu *(Dacrydium cupressinum)* [88%], matai *(Prumnopitys taxifolia)* [63%], kahikatea *(Dacrycarpus dacrydioides)* beech *(Nothofagus* spp) and totara *(Podocarpus totara)* [each mentioned by 50% of the woodworkers interviewed]. The main prerequisite though is quality not quantity of available timber, especially where matching is required, as in table making, or where the grain and figure of wood is paramount, as in turning and also in furniture making. This confirms Houghton and Caskey's (1985) findings. In these circumstances, personal selection of the timber is a distinct advantage. A number of woodworkers interviewed actually selected the butt log with the help of a chainsaw miller. Continued access to this material caused a high degree of anxiety (75% of the sample expressed some concern about the future availability or access to the resource, discussed further in Chapter 7).

Nevertheless, timber volumes used by those surveyed were small. The group utilised under 25 $m^3$ in total in 1986-87, with an average use of 3.6 $m^3$. The biggest consumption was by a furniture maker (6.0 $m^3$) whilst the smallest was 0.9 $m^3$. Total timber usage increased from 16.9 $m^3$ in 1984-85 but average consumption has remained fairly constant at around 3 $m^3$ per year, because two of those interviewed had recently started.

The major disadvantage of woodworking on the Coast was perceived to be the distance from markets (50% of woodworkers said this) as over 60% of their main market was off the West Coast or to overseas clients/visitors, a point also made by Houghton and Caskey (1985). However, one very successful way of raising consumer awareness has been the annual Alternative Furniture Exhibition held in Christchurch, which has grown from strength to strength since its inception in 1983. This has helped expose the work of furniture craftsmen and established the fact that finely crafted furniture can be bought locally, albeit in the upper segment of the market. Craft galleries in Christchurch also sell West Coasters' woodwork.

Both furniture makers and wood turners are in a specialty market requiring specialty marketing. Small scale furniture makers like those on the West Coast only need a relatively small number of clients per year and the very successful ones design and make furniture on commission. Wood turners on the other hand usually make less expensive items and require a higher volume of sales to make a living. Thus, exposure of their work to a large number of people is important.

Two jewellery boxes in rimu and one in beech, inlaid with greenstone (nephrite) by Steve Anderson. Mushrooms and acorn by Quade Anderson in pink pine (*Halocarpus biformis*). Members of The Hokitika Craft Co-op. (Photo by Marilyn Hooper, Audio-visual Centre, Photographic Laboratory, University of Canterbury).

The Hokitika Craft Co-operative, formed four years ago and the Punakaiki Co-op, formed more recently, were established to provide for the display of local craft products, principally to the passing tourist. This joint effort is an example of what can be done by small scale operators who individually would find it extremely difficult to market their

wares as effectively. The co-operative approach is in stark contrast to other alternative forest-based groups, although some of the beekeepers helped each other out.

Only one respondent relied on the activity for 75% or more of his income. 63% of woodworkers had a 50-74% reliance on the activity. The difficulty of making a living from craftwork is indicated by an analysis of one month's Punakaiki Co-op sales which suggests that most of the turnover is accounted for by a small minority of craftspeople (Zuckerman, 1988).

On the whole, this activity is not financially rewarding, except for one or two highly successful woodworkers. Those included in the financial analysis only achieved a 3.6% return on sales: the poorest profitability rate of the groups analysed (see Appendix 6). This was because sales receipts were low, whilst inventories (cost of goods sold) were high. The significance of high inventories is brought home in an analysis of gross profit rates for woodworkers. This profitability ratio was comparatively low at 64.6% and reflects the fact that one respondent was relatively newly established, and hence was still carrying high establishment inventories. The other who provided figures for analysis was suffering from a downturn in sales and was carrying unsold stock. High inventories was also commented on by Houghton and Caskey (1985).

Finally, in an analysis of how productively total assets were employed (rate of return on total assets) woodworkers only achieved a dismal 1.4%, the lowest of the four groups of alternative forest-based users surveyed. No wonder 75% of woodworkers thought that the economic returns from craft woodworking would discourage newcomers (see Discouraging Factors, Appendix 4).

Woodworkers were employing considerable assets in relation to the net income they earned, having invested in a great deal of machinery, much of which they did not apparently use. This is partly due to inexperience. Furthermore, one of the woodworkers was in the process of making his mark. Most woodworkers reported that it took considerable time to establish a market. Many items do not sell well; finding the one that does is a matter of trial and error and in the case of many woodworkers, luck. On the other hand, the other woodworker included in the analysis did not have high quality products. This is the bane of the industry. It seems that there are many people in New Zealand who dabble in crafts, but who are not sufficiently skilled or innovative to make a financial success of the activity. However, once a 'niche' has been achieved, there can be a considerable run on sales.

Those who were included in the financial analysis were over-capitalised. Trading out of this position was difficult, as there was not a steady flow of income. Furthermore,

some of the woodworkers interviewed relied on the tourism trade, which is seasonal (see paragraph 5.2.9, below). This has led one of the woodworkers to take up a job to train unemployed people, partly so that he himself can earn a steady income.

Notwithstanding, those interviewed were relatively optimistic about the market outlook for woodworking, rating it good to very good (mean score 1.4, which was the highest of all forest-based activities). This was mainly because demand was increasing. Thus, if woodworkers could survive the start-up period and overcome the costs of establishment, prospects seemed better. Financial data supports this belief, as there are few major items of on-going expense associated with woodworking. Apart from repairs to buildings (27% of expenses), the only other major expense was associated with running a vehicle (22%). Only a little adjustment to meet market requirements was considered necessary (mean score 1.6) but woodworkers thought that newcomers would be put-off by the lack of and distance from markets (63% said this). Half of those interviewed thought no market adjustment was necessary. Of those that thought that some action could be taken, 75% said that better promotion, marketing and advertising would be appropriate.

Success in turnery seems to depend on finding a novel design, producing quality products and reading the market right. Whilst small relatively inexpensive items may be selling well at present this may not always be so as others jump on the band wagon. Experimentation with new designs is not only important to develop the market, but essential, as it provides the woodworker with variety in what can otherwise become a repetitious activity.

Respondents were queried about Houghton and Caskey's (1985) summary and recommendations but could only agree that assured supplies of timber were essential and that freighting was an issue for furniture makers. The concept of a communal workshop did not find favour with woodworkers, as problems were envisaged in setting it up and scheduling individual work. Furthermore, for those already in business, it was considered too late to consider communal ownership of plant and equipment. Management seminars and direct mail information brochures were not considered helpful. The Woodworkers Guild provides this information. Although half of the woodworkers expressed a preference of being 'independent/one's own boss', when it came to sales, many woodworkers were sensible enough to see that being independent had its disadvantages.

For, although a small group, woodworkers were relatively better placed than other alternative forest-based groups to control their own destiny. Thus, although Houghton

and Caskey (1985) found that the woodworkers they surveyed were part of a small, independent breed of small businessmen, this finding cannot be extended to all craft woodworkers. Half of those interviewed had a communal approach to marketing. They were part of a coherent co-operative organisation and were not reliant on externally based commodity traders. Whilst they were dependent on tourism and markets off the West Coast, they themselves determined what prices they thought the market could stand and their products were not subject to the vagaries of an auction system or its exploitation by a small number of buyers.

Nevertheless, craft woodworking is in its infancy on the Coast. It deserves to be nurtured by resource decision-makers, as it is an example of a high value, low volume use of a scarce resource, namely indigenous timber. Policy makers ought to be thankful that craft woodworkers do not seek to maximise their incomes, as neo-classical economists would have them do, for if they sought to do so they would no longer be engaged in this activity and probably would be unable to find a job in their professions or trades on the Coast. The fact that they remain in the region is a bonus to the local community and to visiting tourists.

### 5.2.6 Sphagnum Moss Harvesting and Processing.

Five species of sphagnum moss are found on the West Coast, but harvesting is largely restricted to one species, *S. cristatum*. It has been harvested for many years but the industry did not develop until export orders were secured to Japan in about 1970 (Denne, 1983). Most, if not all of this moss comes from the West Coast. Since 1970 the industry has expanded considerably, with output increasing yearly. In the calendar year 1988, approximately $6.18 million of sphagnum moss was exported from New Zealand to be mainly used in the horticulture industry, such as wrapping orchid bulbs.[15]

The questionnaire survey covered those self-employed West Coast residents involved in the moss industry. In total 36 people were included in the survey. Information from this group was supplemented with data from externally controlled companies based in Christchurch, Dunedin and Nelson.

Of the 36 respondents interviewed, three were women (8%), a slightly higher proportion than in the total alternative forest-based sample (6%). They had a similar mean age (30-39) and predominantly had no qualifications since leaving school (56% v.

15 It is difficult to put an exact figure on exports as sphagnum moss was subsumed under the trade category 'mosses and lichens' and was only given a separate category in October 1988. However, exports of mosses and lichens other than sphagnum moss are a not great, being worth $56,303 between October-December 1988.

47% for the total sample). 53% were born on the West Coast (compared with 47% for all alternative forest-based users). So, in these respects they were similar to the 'typical' forest-based user surveyed. However, they did not express a strong preference for working independently (see summary of Likes, Appendix 4). Moss harvesting and processing involves a high proportion of part-owners, which could be related to the increasing necessity to make competitive bids for the moss now that DOC and the Land Corporation put concessions up for tender. Furthermore, greater numbers are needed to work blocks of moss. Not only can patches be large, but also wet moss is very bulky (12-14 wet kg = 1 dry kg)

Sphagnum moss factory, Runanga.

Moss producers differed from most other forest-based users in that they had an optimistic outlook. This was because the sphagnum moss industry was one of the few commercial activities on the Coast which was experiencing buoyant economic conditions.

The strong demand for moss is illustrated by the increase in output from the 12 exporters interviewed, shown overleaf in Table 5.2.

Table 5.2 Moss Processed/Handled by Exporters (Dry Tonne Equivalents)

| | March Years | | |
|---|---|---|---|
| | 1984-85 | 1985-86 | 1986-87 |
| Volume = | 246.6 | 462.5 | 717.5 |

These figures give a dramatic indication of the increase in harvested volumes in recent years. It is impossible to determine the ex-factory value of this moss as the financial records of the factories were not all analysed. Together, the two that were analysed averaged a return of $10.33 per dry kilo, net of Goods and Service Tax (GST) in 1986-87 (March year). However, one realised an average of $8.54/kg, as most of the moss was processed for Newmans whilst the other obtained an average of $11.91/kg, as he was directly exporting most of the moss himself. As the majority of factories were linked up with externally-based commodity traders, they would probably have received the lesser of the two prices or less. Individual producers received much less than this. Although the factories paid between $6-$6.57 for top grade dry moss between 1986-87, the average price realised by the two individuals whose financial accounts were analysed was $4.65 per equivalent dry kilo (wet moss was converted into an equivalent dry tonnage).

In the year ending March 1987, moss had an export value of $6.9 million, 90% of which was sold to Japan. However, this is not an exact figure as it includes mosses and lichens, other than sphagnum moss. Nevertheless, the 'other' component is very small, and most is sphagnum moss. Taking these slightly inflated figures, it is still possible to show the spectacular increase in the value of sphagnum moss in recent years, and also to note that there is an apparent recent decline in export value, both in real and nominal terms.

Table 5.3 Nominal Export Value of Mosses and Lichens

| | June Years | | | |
|---|---|---|---|---|
| | 1985 | 1986 | 1987 | 1988 |
| Export value = | $2,929,647 | $3,318,732 | $7,979,045 | $7,269,461 |

Source: Department of Statistics.

The export trade statistics from which these figures are derived do not indicate the volume of trade: those presented in Table 5.2, above, are the only available estimates of production on the West Coast for the period 1984/85 to 1986/87. It is only since

October 1988, when sphagnum moss was separately categorised in trade statistics, that export volumes are available.

The Department of Trade and Industry, (DTI), (1987) estimated that the industry employed 250 full-timers and 250 part-timers at April 1987, but again these figures are suspect as they are not survey figures for the whole year. Although the source was not identified, they most probably came from the Department of Labour's Quarterly Employment Survey. In this survey, which is no longer carried out, a full-timer was anyone who worked more than 30 hours per week. A more accurate way of calculating a full-time figure is to multiply the total number of weeks worked by hours per week, divided by 2000 (50 weeks by 40 hours per week in a year). On this basis, it is estimated the sphagnum moss provided the equivalent of 134 full-time jobs for those directly associated with the industry on the West Coast for the year ending March 1987. These figures, however, should be used with caution.[16]

A financial analysis of four moss producers confirmed that this was a highly profitable business. The rate of return on sales in the moss industry was high, the analysis revealing that there was negligible difference between those picking and processing individually and those running moss factories (62.1% compared with 61.6%). Moss producers had insignificant inventories, so their gross profit rate was ideal, almost 100%. This reflects the buoyant demand for moss. Although moss factories had quite high average assets ($164,502) throughput and profit per kilo was sufficient to make a staggering 226.9% return on total assets. The difference in rate of return between individual moss producers and the factories is probably largely attributable to the difference in size of operations, which more than off-set the different net return per kilo of moss produced.[17] (If individual moss producers had received the same price per kilo as factory owners did, all other things being equal, they would have had a return on assets of 127.6%).

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16 Employment figures are based on recall information and not on an analysis of actual records. They include the hours for proprietors and staff from those included in the questionnaire survey, plus guesstimates from Prime West in Hokitika and the hours of a buying agent for Country Traders. They do not include helicopter operators or the hours worked by head office personnel of externally based organisations.

The export, production and employment statistics are based on the best available information, but underline the difficulty of being able to determine just what the state of the industry is. This is an unfortunate situation for an industry which has been very profitable and one which could be managed on a sustained yield basis to provide permanent employment.

17 The average volume of moss processed over the period 1985/6-1986/7 for the individuals included in the analysis was 2.9 tonnes compared with 77.1 tonnes for the two factories. Net sales for individuals averaged $4.66 per kg compared with $8.53 per kilo realised by the factories (at 1987 prices).

The high profitability of this activity was reflected in the responses to questions on likes and to those on the factors encouraging newcomers (see Appendix 4). A higher proportion of moss respondents than for any other activity thought that the financial returns would encourage newcomers. A larger proportion of moss producers depended on this activity for 50% or more of their income than for any other activity group included in the questionnaire survey. 44% derived 50% or more of their income from this source: 33% derived 75% or more of their income from it. A multiple regression analysis revealed that those who had a high dependence on moss production had a highly statistically significant tendency to have few other jobs and to have been involved for a moderate period of time (see Appendix 5). This is consistent with the fact that most local factory owners interviewed had been in business from the early days of the industry and had a network of contacts to supply them with moss and the ability to successfully tender for the resource.

Not surprisingly, market outlook was perceived to be 'good' (mean score of 1.1). Four helicopter operators, who lifted moss as part of their service activity, had a similar rating (1.0). A canonical correlation between demographic variables (age, place of birth, years involved in the activity and income dependence) and market variables ( advice sought, market outlook, degree of adjustment needed to satisfy market requirements and plans to change the scale of operations) revealed a statistically significant tendency for relatively younger respondents, who had been involved in the activity for some time and to be moderately dependent on it, not to seek advice about their operation, but to believe that some market adjustment was necessary and to be planning to reduce the scale of their activities (see Appendix 5).

This result is interesting, given the profitability of the activity. But, many respondents expressed misgivings about the state of the industry. Most moss producers can be categorised as resource harvesters and were doing little actively to conserve or enhance the resource, as discussed in Chapter 7. A very high level of concern was expressed about the future availability of moss (86% had a concern, as will be expanded on in Chapter 7). This stemmed from the restructuring of government departments, changes to the way moss was allocated and charged for and delays in the introduction of new policies.

DOC started putting moss up for tender in 1988. A tender is made on the basis of expected yield and value. This replaces a royalty system based on the amount harvested. As noted above, since no scientific method is available to assess yields, tenders are based on guesstimates, to the detriment of all concerned. Payment now has to be made before the commencement of harvesting. Hence, the new system favours

those with capital, which are generally externally based companies. Timberlands adopted a more convenient administrative arrangement by entering into a long term agreement with Colyer Watson to process all the moss under its control. Although this has since been superseded by the formation of a joint company, it raises questions about the equitable distribution of moss to harvesters, and the distribution of profits. But, as the profit sharing arrangements have not been revealed, it is impossible to say whether the public are getting a fair return for the resource.

The delay in formulating new harvesting policies for moss (and other forest-based resources) by both DOC and Timberlands, plus the lack of knowledge about the industry has led to a great deal of uncertainty. This has been compounded by the 'user-pays' market philosophy of the Government. The onus was being put on potential users themselves to identify and quantify the moss resource and to make part payment for research. Producers have become secretive about their operations, which has not created the spirit of co-operation required to avoid unnecessary competition and exploitation by buyers. Mistrust already existed in the industry before the restructuring of government departments: there were allegations of favouritism in the awarding of licences and an alleged failure by NZFS to honour an agreement to issue moss licences only to members of the Sphagnum Moss Association.

As a voluntary body, the Sphagnum Moss Association has had no power or influence. Its members have expressed concern about the need for further research to sustain the resource, but failed to make a contribution to the DSIR when called upon to do this. They also tried to come to an agreement on export prices, but reportedly broke ranks soon afterwards. There have been allegations of undercutting, with export prices falling from $16/dry kg FOB in late 1985, to $14/dry kg in 1987, down to $12/dry kg FOB in 1988 (Frogley, 1988).[18] As a result of this disarray, and the failure to obtain preferential allocations of moss, membership has declined dramatically, as shown in Table 5.4, overleaf.

18 This probably accounts for the decline in export values noted in Table 5.3, though production may have peaked too. Only now that production statistics are available can this be monitored.

Table 5.4 Membership of Sphagnum Moss Association.

| | Years | | |
|---|---|---|---|
| | 1987 | 1988 | 1989 |
| Membership = | 51 | 45 | 9 |

Source: Howe, D. (1989)

For the last two consecutive years, the Association has not been able to get a quorum to hold its AGM. Only 10 members are required to make a quorum (Howe, D. 1989).


Helicopter recovery of moss.

Physical access to moss is another issue. There are no comprehensive records of the distribution of moss on the West Coast, although the whereabouts of easily accessible moss is probably common knowledge. With helicopter recovery, it is likely that much of the easy country has been scouted-out and laid claim to. Thus, it is the back-country that is being more extensively worked, entailing the increasing use of helicopters. From the financial records analysed, this was an insignificant item of total expenses for

factories (1% compared with the cost of buying moss in, 54%, and wages, 25%) and first appeared in the records for the latest year analysed. However, it can be expected to increase, not only because of accessibility problems, but also because the use of helicopters is often necessary to avoid damaging harvest areas. For individuals, transport costs, in the form of vehicle expenses and fuel (35%) and cartage (14%) were the only major expenses. Since most individual moss producers feed their moss into the local factories, and hence incur this expense themselves, the cost of recovering moss is an item to be watched.

In summary, the sphagnum moss industry has been one of the few bright spots on the West Coast, generating income and employment. However, the administration of the resource and the attitude of producers leaves a great deal to be desired. Because of the value of moss and the inevitable scramble for the resource, changes in policy were long overdue. Even to the dying days of the NZFS, moss was regarded as being incidental to forest management, which had a timber bias, as explained in Chapter 4. The little research that was initiated was discontinued. Furthermore, insignificant revenue was collected from moss licences, as payment was based on an honest disclosure of the value of moss harvested (Thorpe, 1987). The NZFS and DL&S issued and renewed most licences on a month by month basis: there was thus no guarantee that harvesters would be able to return when the moss regenerated. These short term arrangements continued for over a year after the formation of DOC, Timberlands and Land Corp and did not foster the careful harvesting of moss. No one knows what a sustained-yield is, except intuitively. The situation was deadlocked whilst DOC placed the onus on harvesters to determine where and how much moss was available. It has been 'hung-up' with the Government's 'user-pays' philosophy and its own mandate to preserve resources, rather than to make 'profits'. Timberlands, on the other hand, has entered the processing business itself with Colyer Watson. This is administratively more appealing, but is less susceptible to public scrutiny.[19] These manoeuvrings reveal a conflict between equity and efficiency, which has yet to be publicly debated. Individual moss producers have noticed, though, that they are being squeezed out of the industry and that it is getting more and more difficult for them to secure enough moss to make a full-time living. Recent statistics reveal that the value of moss exports has fallen. Whilst price cutting may be responsible for this, the fall in value may also indicate a plateau in moss production, which could be exacerbated if picking pressure is maintained at a high level.

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19 Timberlands is part of the Forestry Corporation, which is a public SOE. However, the legislation establishing SOE's gives Parliament little say in how they are run. Ministers are less accountable now than they were when SOE's were government departments.

The neglect of this industry by NZFS and DL&S and their successors means that the full commercial potential of moss was not realised and that future opportunities will be lost unless there is a change of attitudes. There is a need for cooperative efforts to conserve the resource, rather than individualistic attempts to maximise incomes.

### 5.2.7 Nurserying.

The three nurserymen interviewed on the West Coast were all males, but all had a spouse who were shareholders in the activity. One was born on the Coast, one elsewhere in New Zealand and one overseas. All had a post-school certificate/undergraduate training. They were relatively older than the median age of the total alternative forest-based sample. One was 40-49, the other two were 50-59. However, they had not been involved in nurserying for all of their working lives: two had been involved for 10-15 years, and one for a period longer than this. Nevertheless, they were occupied full-time in this activity; one received 50-74% of his income from it, the other two 75% or more of their income. As a result, they were not engaged in other alternative forest based activities. Their involvement in nurserying should not be interpreted to mean that they were fully occupied with taking plants from the forest, as this aspect of their work was, on the whole, minor compared with growing and propagating plants in the nursery itself. However, the bulk the the original stock came from the forest.

Nurserymen particularly liked "working with nature" and "watching the plants grow". Two of the three had no particular dislikes; the one who had, complained of "bugs in the pongas". Although it was impossible to analyse financial records due to the minor contribution of wild plants to their total operations, two of the three nurserymen thought that the financial returns would deter newcomers.

Pongas (rear) and other ferns being grown-on in a nursery near Greymouth.

The advantage of the Coast is that the climate and availability of sawdust makes it cheaper to grow cuttings outdoors than many other places in the South Island. The early, mild spring gives the Coast an advantage over Canterbury and other markets on the east coast of the South island. This is thus the busiest period of the year (see Chapter 7). Most nurserymen are self-sufficient and take plants, cuttings or seeds to improve strains. Notwithstanding, there is an increasing trade in wild plants (41,700 in 1986-87) which are destined for garden centres mainly on the east coast of the South Island. Similarly, thousands of pongas (tree ferns, *Dicksonia squarrosa, D. fibrosa, and Cyathea medullaris*) posts are hauled by truck across Arthur's Pass each year, destined for Christchurch: 40,000 by one nurseryman interviewed. These are sourced from a wide area and although there is no shortage of supply, stem diameter and size are reported to be decreasing. As tree ferns are very slow growing (taking up to 30 years to mature), over-exploitation can easily occur, as it has in the North Island (*The Press*, Christchurch, 15/10/1987). Other pongas are taken as small plants and grown-on in the nursery before sale. Some people spoken to are trying to develop a market for bowls turned out of mamaku ponga (*Cyathea medullaris*).

A small quantity of podocarp and beech seeds are also gathered, as this is one of the main sources of podocarps in the South Island. These seeds are germinated and seedlings used by government departments for enrichment planting on the Coast. Local seed sources were used to preserve local provenances. However, the demand is so small that one tree can provide for all the demand for one species!

Lichens and ferns are also sold, but this is as yet only a small trade. One nurseryman feels that the market could be developed and planned to open an outlet in Christchurch to do this.

Nurserymen made few demands on the indigenous forest resource, only taking plants or seeds to improve their stock or for propagation. However, the nurseryman who was a primary resource harvester taking pongas and not improving the resource, was in danger of depleting it. The consequences of this practice is discussed in Chapter 8.

### 5.2.8 Charcoal Manufacturing.

One of the two charcoal producers was interviewed, but he has since retired. The job was more a challenge than anything else but nevertheless, in his time he reported that he made a reasonable living, even if work conditions were not ideal. He thought the market outlook for charcoal making on the Coast was 'good'. (Two other charcoal manufacturers now exist on the Coast; one failed to return his questionnaire, whilst the other has only recently commenced operations). The respondent interviewed used 40 dry tonnes per annum of mainly podocarp off-cuts from the local mill before it closed down . Beech however was a preferred species.

The closure of the sawmill was part of the Government's decision not to renew forest allocations, following the Blakeley Committee recommendations. As there are no new areas being allocated, the remaining charcoal merchants have a limited future, unless a beech scheme eventuates.

### 5.2.9 Guiding (tourism).

Professional guiding is an activity which is in its infancy in New Zealand, for, although tourism has become an important part of the economy, it has only expanded rapidly in the last decade, with overseas visitor arrivals increasing from 384,238 in the year ending 31 March 1975 to 867,522 in year ending March 1989 (New Zealand Tourist and Publicity Department (1986; 1989a). While domestic tourism has been important to the region, the demand for the services of professional guides by domestic tourists has not been manifest. Whether this has been due to the preference of New Zealanders to

'do their own thing' or to a lack of promotion, or both, is not the concern of this research. The point is that professional guiding is still a rare forest-based activity.

Ten guides were found who were actively involved in taking tourists on a forest experience. This group included three who took people on horse treks, but excluded those who transported tourists into and out of the forest or its environs by helicopter. One of the group was a woman. Their median age was 30-39; 80% were married or remarried. Like those involved in the other relatively new and emerging activity, craft woodworking, a very high proportion were born off the West Coast (90% ), although they had lived on the Coast for a number of years (30% for 16 to less than 20 years; 30% for 26 or more years). Nevertheless, 70% had been guides for less than four years, most probably being influenced by the media, government rhetoric about tourism as a growth industry and the environmental lobby, who envisage a bright future in forests for tourism. The fact that half of those interviewed said that it was fashion ('the way to go') that would encourage newcomers supports the contention that they themselves had been influenced by the groundswell of public opinion (see Appendix 4).

Inclement conditions, following heavy overnight rain. Near Lake Brunner.

It was not that the group was making lots of money. On the contrary, only three derived 50% or more of their income from this activity. Two of the latter were resident in Franz Josef, one of whom claimed that there were only four full-time professional hunting guides in New Zealand.[20] The other guide in Franz Josef runs a shop and glacier trips. They were well established, whilst the others were relatively new to the activity and struggling to make guiding a full-time occupation. (One respondent has subsequently ceased operating). Thus, they were divided about the financial rewards available from guiding (see summary of Likes and Dislikes, Appendix 4).

Only one guide was the sole owner of his operation. The majority were involved with their spouses and family as joint owners and three were shareholders with third parties. Two of those who were involved with friends managed larger operations than the other guides interviewed. Nevertheless, the very high joint ownership within this group of alternative forest-based users cannot be solely related to organisational necessity, as a high proportion were outward-going, rather than having a preference for working independently, favoured by beekeepers, woodworkers and most animal trappers and shooters.

Thus, the main aspect liked about the activity was meeting and being with people (70% said this), which drew more response than an attachment or particular like of the physical environment (see Appendix 4). This is consistent with the fact that their prime relationship was with people, as their clients, rather than primarily with the natural resource (see Chapter 2). The natural environment was, nevertheless, obviously something that guides enjoyed: their unanimous preference for living on the Coast by choice, their length of residence and involvement in an outdoor activity are testimony of this. When it comes to guiding though, it is the social aspect of the activity that they most enjoyed.

The most often mentioned factor that was considered to discourage newcomers related to government administration and management of the indigenous forest estate. There was uncertainty over DOC's intentions, as it was still in the process of formulating policies. This was inevitable as the department was finding its feet. However, the most difficult issue to resolve arises out of the desire by operators to pursue commercial objectives, which sometimes conflict with DOC's mandate to protect the physical environment. One guide wished to extend her pony trekking into the Westland National Park,but this was not permitted under the National Parks Act. Another conflict in values arose from the desire by professional hunters to extend safari hunting into the same park.

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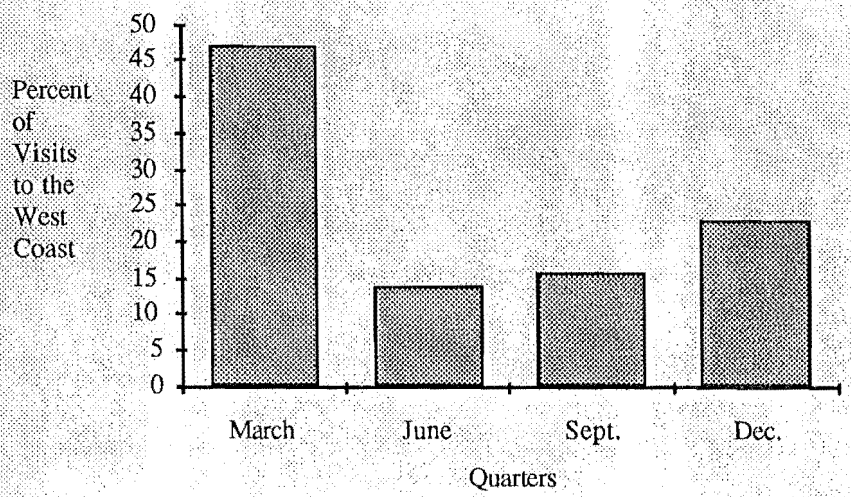
20 In 1988, according to the Vice President of the New Zealand Registered Guides Association, there was "little more than a score" of registered hunting guides in New Zealand (Jones, 1989).

Government policy is to eradicate deer (and other noxious animals) in national parks and reserves, in order to protect indigenous flora and fauna. Eradication has however proved impossible and effort has been concentrated in priority areas, selected on the basis of downstream values at risk (Challies, 1985). Hence, although the legislative intention is to eradicate these animals, the pragmatic management objective is to keep wild animal numbers as low as possible, though generally not with the help of commercial hunters. This affects the commercial recovery of all deer, but, in particular, it raises particular objections from those guides who wish to hunt thar.

The most sought after game animal is Himalayan thar [*Hemitragus jemlahicus*] yet there is a moratorium on the commercial hunting of this animal (Parkes and Tustin, 1985). Nevertheless, the various parks boards have a mandate to keep this and other animals in check, so in 1987, approximately 25 thar were shot in one helicopter control operation in Westland National Park. This cost the tax-payer at least a few hours flying time, at between $600-$800 per hour. Only 10 animals are recorded as being processed by Westland Frozen Products in Hokitika. Ironically, professional guides claim that New Zealand is one of the few countries where this world ranking game animal can be found. Overseas hunters are eager to come, but are frustrated by the lack of government policy to manage this animal for game hunting (Peterson, 1987). Commercial hunters said they were being further discouraged because DOC was talking about a 50 mile exclusion zone around Westland National Park, where no game hunting would be permitted. The whole issue of game management remains unresolved in New Zealand, let alone on the West Coast. It merits more in-depth discussion, as it is an industry with potential which so far has not been sufficiently capitalised on. This matter is taken up in Chapter 8.

Considering the Coast's reputation for rain, it might seem surprising that the guides did not make a bigger issue of the weather, other than the 20% who said it would discourage newcomers to the activity. As seasoned outdoors people, guides would not be bothered much by continual rain, but it does have a dampening effect! Climate and other natural conditions make West Coast guiding a very seasonal activity, with the busiest period being in summer and autumn. This is discussed in greater detail in Chapter 7. Suffice it to say here, that this seasonality is confirmed by statistics from the New Zealand Tourist and Publicity Department (NZT&PD), depicted in Figure 5.4, overleaf. This figure shows that over 45% of all visits to the West Coast in 1988 were during the March quarter, with a considerable fall in visits in autumn and winter. This presents considerable problems to tourism operators, who must make sufficient income in the summer months to survive the slack periods. (Yet, the winter period is usually more settled, whilst the equinoxes are generally wetter on the West Coast).

Figure 5.4 Tourism Seasonality, 1988.




Source: NZT&P Dept., 1988c.

Those interviewed had 9,500 clients in the year ending March 1987, down from 14,500 in 1985/86 and 14,000 in 1984/85. Thus, when the survey was carried out market conditions had deteriorated, no doubt accounting for some of the comments made about the financial returns. Nevertheless, guides were optimistic about the future, rating the market outlook 'good' (average score 0.9, on a scale of -2 to +2). A slight degree of adjustment was generally thought possible to satisfy market requirements, the most important being more professionalism and better management.

Compared with the total number of tourist visits to the West Coast, guides only captured an infinitesimal proportion of the market. As there were 615,893 visits made to the West Coast by domestic and international tourists in the year ending March 1987, the guides share of this market was 1.5% (New Zealand Tourist and Publicity Department, 1988a).[21] Furthermore, contrary to government and trade forecasts that tourism offered good economic prospects, in reality there was a down-turn in the average length of stay by visitors to the West Coast, from 2.6 nights in 1986/87 to 2.3 nights in 1987/88, despite a slight increase in absolute number of visits (New Zealand Tourist and Publicity Department, 1988a; 1988b; 1988d; 1989a; 1989b). This was largely due to factors beyond the control of the local tourism industry or guides. Furthermore, as the average length of stay is so short, it is difficult to entice visitors to spend extra time on anything

21 Unfortunately, tourism statistics have recently been reorganised and it is not possible to compare earlier years, or to break- down visits by international tourist into their reason for visit. Hence,

more than a casual, short walk. Obviously, guides must appeal to a sub-sector of the market different to the average motorised visitor trying to do a South Island circuit in a few days. An example of what can be done is provided by the Royal Forest and Bird Protection Society, who, by targeting their market, took 150 people on adventure tours in 1987-88. These were informal, mainly social, outings, involving easy walks and were advertised in the Society's magazine *Forest and Bird* (Devery, 1988).

With such a specialised activity and so few guides taking visitors on a forest experience, there are enormous hurdles for this group to overcome to establish their niche in the market. Individually, they have little impact. Advertising bush walks, in appropriate domestic magazines, is not expensive, but the more particular pursuits, like safari hunting, are very expensive to promote in overseas markets. At present, it is very much a 'chicken and egg' situation. The West Coast is not that well known by visitors, hence guiding is in its infancy. Most of the guides are part-timers. Yet to attract clients, guides must offer some surety that their operation is viable and will still exist when the visitors arrive. Most guides are not in a position to launch expensive promotional campaigns, and must, to some extent, ride the coat-tails of wider tourism promotions. However, the Government has decided to withdraw its financial support for regional promotional assistance in favour of promoting domestic tourism as a whole. The Minister of Tourism is reported to have said that grants under the Regional Promotions Assistance Scheme tended to encourage regions to compete with one another (*The Press*, Christchurch. 25/7/1989). Thus, West Coast tourism is going to have to stand on its own feet, and those in minority interest activities will have to find alternative ways and means of securing a larger market. This is discussed in Chapter 8.

## 5.3 Summary.

This chapter has described the nature and state of alternative forest-based activities on the West Coast and those associated with them. As a result, we not only have a better understanding of who was involved and their perceptions of the future, but we also have an appreciation of the fragile state of most of the activities. Although the demographic characteristics of users and their economic and financial situation are specific to the period when the survey was conducted, they have been related to conditions and events before and after the field-work took place. In this way, it has been possible to show the dynamic, interrelated state of affairs, and, for the most part, the lack of local producer influence and control.

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although it is possible to isolate the holiday/general leisure component of total domestic visits, it is not possible to do this for international visits.

As all activities, except moss production, were economically depressed it may be asked why alternative forest-based users remained on the Coast and how they managed to survive. Clearly, they were not there for the money, and, as is evident from the financial analyses, negative comments and general low income dependence on the activities, many could not exist on one activity alone. Even in moss production and possumming, high profits did not necessarily translate into high gross incomes. As the discussion has shown, profitability ratios indicate the financial performance of different activities, but do not tell us whether the returns are adequate for a full-time living to be made. They do not reveal how much of the resource is available or whether access to it is possible; nor do they indicate how much effort is required. Even though some profitability ratios were very low, it must have been possible to make a living from a number of marginal activities, but not necessarily from any one alone. This makes life difficult.

As the responses have shown, there are intangible, non-monetary benefits of living on the Coast. They traded-off possible higher incomes elsewhere for a perceived better quality of life on the Coast. This runs counter to neo-classical assumptions: that profit maximisation is the norm and that, given sufficient monetary inducement, people will move to areas of greatest economic opportunity. People may think about monetary attractions, but, in the end, decide that sufficing was better than maximising income (Simon, 1983). Furthermore, they may be prevented from realising higher incomes, as in moss harvesting, even though the activity is highly profitable.

Respondents found the means to stay on the Coast. Why and how they did this is explained in the following chapter.

# CHAPTER 6 THE COAST AS A WAY OF LIFE?

## 6.1 Introduction.

There is a sign beside the road to Greymouth pointing the way to Shantytown. This may confuse the visitor as he might have been under the impression that he had already passed through depressed areas and shanties - rustic rural buildings with rusting corrugated iron roofs, in need of a good coat of paint. So what is different about Shantytown? It is a re-creation of the past, a pioneer museum, yet it still has links with the present.

Or the visitor may go to a hotel and find the staff have a casual attitude to service. They seem to tolerate visitors, but do not intend to put themselves out to make the visitor feel at home. The impression gained is that they would prefer the visitor to "p...-off", preferably after parting with some money.

The visitor will also notice the devastation caused by clearfelling and subsequent burning of the indigenous forests from the Grey valley to south of Ross: the wasted land, where little of economic value now seems possible. If the visitor ventures off the beaten track, he will come across vast areas of sorted and resorted tailings, a legacy of past mining, which has been recolonised by gorse, manuka (*Leptospermum scoparium*), kanuka (*Kunzea ericoides*), beech and even successfully replanted in *Pinus radiata*.. To many, these species will be regarded as weeds.

On the basis of these experiences (and they are actual ones!) the visitor tends to make sweeping generalisations about all West Coasters. "Coasters are a rude lot, they are lazy, don't care about 'intruders' and would much prefer to be left on their own". "Coasters must be escapists or have something to hide by choosing to live in such 'primitive' conditions". "And surely, environmentalists are right: Coasters exploit the environment; they are out to make a quick buck, and do not give a damn about sustained-yield management".

But then, the visitor will notice, when finally arriving at a large town, that Coasters live in suburban monotony, in houses not much different from those found in Auckland and Christchurch. They frequent supermarkets, buy their Colgate toothpaste, watch 'Dallas' on their televisions and drive late model cars. Their regional television news comes from Christchurch. The mass culture has reached the West Coast, even though the residents may not have the range of choice available in a big city. But no matter, if they need something special, they can always drive to Christchurch!

Is there such a thing then as a West Coast 'way of life'? Are alternative forest-based users different? Do they have a distinct lifestyle: Vidal de la Blache's *genre de vie*, as discussed in Chapter 2? If so, does this make their adjustment to change difficult or non-committal?

Although it is not possible to definitively answer these questions, as the research was not designed to give deep socio-psychological insights into the habits and attitudes of alternative forest-based users, it is possible to show that there are some distinct features of alternative forest-based users. One cannot generalise about the different groups of users. We have already shown some of these differences. Within groups, there are also differences in the management of the resource and in attitudes and beliefs; for instance, some woodworkers are members of a craft co-operative, whilst others are not. These points will be expanded on in this and the following chapter.

## 6.2 Strategies for Survival.

It has been established that most alternative forest-based activities were economically depressed and that many respondents did not rely on them for their livelihood. It is thus instructive to examine what other activities they were involved in and to note the overlap of some forest-based activities, and the fact that others were pursued completely independently. In this way, it will be shown that the difference between activities is not just based on the differing socio-economic factors discussed in Chapter 5.

Forty one percent of those in the questionnaire survey reported that their alternative forest-based activity or activities were not their main occupation, whilst only 50% of them relied on these activities for half or more of their taxable income.[1] Occupational status is shown in Table 6.1, below.

Table 6.1: Occupational Status of Alternative Forest-based Users.

| Total respondents = | 116 |
|---|---|
| | % |
| Main occupation | 59 |
| Not main occupation | 41 |

Nearly half of those interviewed whose main occupation was not alternative forest-based were farm owners, followed by those involved with the timber industry and machine operatives. Thus, whilst most alternative forest-based occupations might be classified as 'blue collar', most of the other occupations engaged in could also be so classified. Few other main occupations were in the administrative, managerial or service industries.

1 The difference between these two figures is attributable to the fact that respondents interpreted 'main occupation' either in terms of time involvement or income reliance (see Chapter 3, above).

This is not surprising, as most alternative forest-based activities would not fit in easily with an office job. These other occupations are shown below in Table 6.2:

Table 6.2: Other Main Occupation If Not Alternative Forest-based.

| | |
|---|---|
| Total respondents = | 48 |
| | % |
| Farm ownership | 46 |
| Logging/bush contractor | 17 |
| Machine/boiler operator/engineer | 15 |
| Administrative/managerial | 4 |
| Builder/plumber/drainlayer | 4 |
| Fishing | 2 |
| Mining | 2 |
| Service occupation | 2 |
| Professional | 2 |
| Other | 6 |

Furthermore, apart from their main occupation, respondents were found to be engaged in a number of subsidiary ones. In line with the marginal nature of most alternative forest-based activities and the general economic depression on the West Coast, it was found that only 16% of the total sample had one job or source of income. This is shown in Table 6.3, below. As it was known that there were sub-regional disparities in the level of economic development, the number of jobs/income is analysed by sub-regions, which for convenience sake are based on those administered by the Department of Conservation.

Table 6.3: Total Number of Jobs/Sources of Income.

| | Arahura | | Buller/ Inangahua | | S.Westland | | Total | Percent |
|---|---|---|---|---|---|---|---|---|
| | n. | % | n. | %. | n. | % | n. | |
| Total respondents = | 48 | | 35 | | 33 | | 116 | 100% |
| One job/income | 9 | (19) | 3 | (9) | 4 | (12) | 16 | (14) |
| Two | 16 | (33) | 11 | (31) | 13 | (39) | 40 | (34) |
| Three | 9 | (19) | 12 | (34) | 3 | (9) | 24 | (21) |
| Four | 7 | (15) | 9 | (26) | 10 | (30) | 26 | (22) |
| Five | 7 | (15) | 0 | (0) | 3 | (9) | 10 | (9) |

N.B. Figures rounded

In the more marginal sub-regions of Buller/Inangahua and South Westland there was a proportionally greater reliance on more than one source of income: 91% and 88% respectively compared with 81% in Arahura. Sixty percent of respondents in Buller/Inangahua relied on 3 or more jobs or sources of income. The median number of jobs/sources of income was 3 for the whole of the West Coast. However, it was two in the Arahura and South Westland regions and 3 in Buller/Inangahua. The higher median

for Buller/Inangahua confirms the lesser development of beekeeping, moss, tourism and woodcraft and industries other than alternative forest-based ones in this area, making it necessary to undertake a greater number of activities to make a living. The lower median figure for South Westland is not surprising in retrospect, for although this region stretches from the Waitaha river to the Cascade range in the extreme south, it includes the main area of indigenous timber production and the focus of tourism around Franz Josef and Fox Glacier. South of the latter the total population is sparse (this is the area south of the Cook river) with a total population of 524 in 1986. The only settlement of any size is in the Haast area, with a population of 438 in 1986.

Some of these other sources of income were derived from involvement in other alternative forest-based activities. Again there is a sub-regional disparity in the total number of these activities undertaken, as shown below:

Table 6.4 Number of Alternative Forest-based Activities Undertaken.

| | Arahura | Buller/ Inangahua | S.Westland | Total |
|---|---|---|---|---|
| Total respondents = | 48 | 35 | 33 | 116 |
| | % | % | % | % |
| One activity only | 73 | 54 | 58 | 63 |
| Two activities | 21 | 31 | 30 | 27 |
| Three activities | 6 | 14 | 9 | 9 |
| Four activities | 0 | 0 | 3 | 1 |

N.B Figures rounded.

The marginal situation in Buller/Inangahua and South Westland is borne out by the fact that 46% and 42% of respondents in these areas respectively were involved in two or more alternative forest-based activities. In contrast, 27% of respondents in Arahura were involved in more than one activity.

It is possible, however, to discern different patterns of work organisation between certain alternative forest-based groups. Beekeepers, the charcoal manufacturer, craft woodworkers and guides were involved in proportionally fewer other alternative forest-based activities than deer trappers, goat catchers, moss harvesters and possummers. For example, 79% of beekeepers were involved in only one alternative forest-based activity and 21% were involved in two. The number of alternative forest-based activities engaged in by each activity group is shown in Table 6.5, overleaf.

Table 6.5 Activities Engaged In

| Proportion engaged in: | Beekeepers | Charcoal manufacturer | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|---|
| One activity | 79 | 100 | 86 | 37 | 0 | 36 | 100 | 30 | 70 | 0 |
| Two activities | 21 | 0 | 13 | 34 | 60 | 36 | 0 | 51 | 20 | 38 |
| Three activities | 0 | 0 | 0 | 26 | 40 | 25 | 0 | 17 | 10 | 50 |
| Four activities | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 2 | 0 | 13 |

N.B. Figures rounded

The high proportion of venison shooters, possummers, goat catchers and deer trappers involved in more than one alternative forest-based activity is partly attributable to the marginal state of these activities. The same cannot be said of moss harvesters, as the financial returns in this industry were good. Thus involvement in other activities by moss harvesters partly reflects problems of physical and financial access to moss resources, discussed in Chapter 5.

The involvement of respondents in other alternative forest-based activities is also instructive as it reveals a grouping of 'compatible' and 'incompatible' activities. This is shown in Table 6.6, overleaf. Actual numbers of respondents involved in different alternative activities are shown, rather than proportions. Thus, there were 15 beekeepers who did not undertake any other forest-based activity, one who was also involved as a craft woodworker, two who were involved with moss and one who also was a possummer. Deer trapping, moss harvesting and possumming were undertaken together by quite a few respondents. Goat catching and venison shooting were not undertaken alone, bearing out the marginal financial state they were in, as discussed in Chapter 5.

Table 6.6 Forest-based Matrix

| | Beekeepers | Charcoal | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|---|
| Beekeepers | 15 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 0 |
| Charcoal maufacturer | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Craftsmen | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Deer trappers | 0 | 0 | 0 | 13 | 2 | 12 | 0 | 15 | 1 | 3 |
| Goat catchers | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 3 | 0 | 1 |
| Moss harvesters | 2 | 0 | 0 | 12 | 1 | 13 | 0 | 15 | 0 | 4 |
| Nurserymen | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Possummers | 1 | 0 | 0 | 15 | 3 | 15 | 0 | 14 | 3 | 6 |
| Guides | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 7 | 0 |
| Venison shooters | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 6 | 0 | 0 |

Another indicator that animal-based activities were distinctly different is that none of those involved with animals employed other people in their businesses. Seven beekeepers, though, employed some help, but only one employed full-time staff in 1986-87. Taking the estimated total hours worked by full-timers and part-timers, full-time equivalent positions have been calculated, assuming 50 weeks and 40 hours per week worked per year. This produced only 5.5 full-time equivalent employees in beekeeping in the 1986-87 financial year. All three nurserymen employed staff in 1986-87, but these were part-timers and in total this involved 0.99 full-time employees in 1986-87! Six guides provided a total of 5.8 equivalent full-time jobs for employees in 1986-87. Thirteen moss producers out of the 36 included in the questionnaire survey employed staff in 1986-87, but two of these only part-timers. In total this involved 61.4 full-time equivalent employees.[2] Although these figures reinforce the small scale nature

2 A further estimated 48.9 full time equivalent employees were involved at a moss factory in Hokitika in 1986-87, but were not part of the questionnaire survey.

of alternative forest-based operations, they also highlight the differences between the animal-based activities and the rest which provided for a different lifestyle.

The difference in activities engaged in and number of sources of income would translate into a different way of life for different individuals in different parts of the West Coast, just as there are differences between activities. Hence, it is misleading to talk of a "South Westland lifestyle" (NZFS/DL&S, 1987) or to label all craft woodworkers as an "extremely independent breed of small businessmen (who) pursue their work as a way of life" (Houghton and Caskey, 1985).

However, alternative forest-based users do have at least one element in common, which binds them to the West Coast. This is their preference to live there predominantly for environmental and social, rather than economic reasons.

South Westland Forests from Okarito Trig.

## 6.3 Residential Preferences.

It might be argued that West Coasters have very few alternatives to turn to and that they are forced to work in whatever seems to be financially rewarding, or that they cannot afford to move. However, the evidence gathered in the survey does not support this view. All respondents when asked if they lived on the West Coast by choice confirmed that they did.

The strong non-monetary attraction of the alternative forest-based activities is further confirmed by the fact that few respondents were definitely planning to discontinue their operation, or were unsure about continuing, despite the difficult economic conditions.

Only in deer trapping, moss harvesting and possumming did more than one respondent state that they were unsure about continuing or had decided to discontinue. The predominant reason, amongst the animal trappers, was the poor economic returns. All four moss harvesters who were unsure about continuing said it was because of the unavailability of the resource. This is shown in Table 6.7, below.

Table 6.7 Number Discontinuing/Unsure.

| | Beekeepers | Charcoal maufacturer | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 | 1 | 8 | 35 | 5 | 36 | 3 | 47 | 10 | 8 |
| Discontinuing | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 |
| Unsure about continuing | 1 | 0 | 1 | 5 | 2 | 4 | 0 | 5 | 0 | 1 |

Furthermore, half of those surveyed had been born there and most had lived on the Coast for a considerable period of time: 49% for more than 26 years (see Appendix 4). Although there are no comparable statistics from the Census on residency, it is known

that urban populations are highly mobile.[3] If they did not like the bleak economic conditions, one would have expected them to have moved.

Environmental values feature very prominently. Only 5% said that they were financially better off by being on the Coast or that money was the principal attraction, though 17% stated that their job or business was a reason for living there. Had these environmental and aesthetic reason not featured so prominently, one would have expected more respondents to have wanted to move

Their reasons for preferring to live on the West Coast are shown overleaf in Table 6.8. This table shows, in detail, the strong preference for the natural environment: the mountains, bush and outdoor life and the better social conditions there. Whilst 17% said they lived on the Coast because their job was there, only 5% said they were financially better-off for doing so.[4]

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3 The closest measures in the Census of Population and Dwellings, 1986, are Address 5 years Ago and Years at Usual Address.

4 Income figures for alternative forest-based users gathered in this research project are not comparable to those of the 1986 Census because of the differences in definitions used and problems of seasonality caused by the timing of the Census (see Chapter 3). Using Census figures for comparative purposes, a special analysis of those who came closest to our definition of alternative forest-based users revealed a median income of $9,003, compared with $11,202 for the total of self-employed residents on the West Coast and $13,527 for all those who were gainfully employed on the West Coast.

Table 6.8 Reasons for Living on West Coast.

| | Total | Percent |
|---|---|---|
| Total respondents = | 116 | 100 |
| | n. | % |
| The bush/mts/natural/wild/phys envir/clean air/water | 42 | 36 |
| Lifestyle/way of life/quality of life | 29 | 25 |
| Pace of life/easy-going/relaxed | 24 | 21 |
| Employment/job here/business interests | 20 | 17 |
| Peace/Quieter life style | 15 | 13 |
| Outdoor life/rural life | 15 | 13 |
| Recreation | 15 | 13 |
| Friendly people/people/supportive | 13 | 11 |
| Easy/handy access to bush/natural envir/activities | 12 | 10 |
| Scenery/beauty/the view | 11 | 9 |
| Lack of people/not over-populated | 11 | 9 |
| Climate-not extreme/good/weather | 10 | 9 |
| Family here/ties/home | 10 | 9 |
| Good place for kids-fewer risks/less seamy | 8 | 7 |
| Money/financially better off here | 6 | 5 |
| Working outdoors/combining business and pleasure | 6 | 5 |
| Wide variety/everything I want is here/can do anything | 6 | 5 |
| Own boss/can be self employed/free | 5 | 4 |
| Born & bread/brought-up on Coast/Coaster at heart | 5 | 4 |
| Remoteness of the place/isolation | 5 | 4 |
| Crime rate low | 4 | 3 |
| Never been elsewhere/been here all life | 3 | 3 |
| Other/N/A | 12 | 10 |

Furthermore, although preferring to live on the Coast, only five respondents were thinking or had thought of moving. Their reasons are shown below in Table 6.9.

Table 6.9 Reasons for Thinking of Moving.

| | Total |
|---|---|
| Total respondents answering = | 5 |
| Can't sell house/cant afford to move | 2 |
| To purchase dairy farm | 2 |
| Other | 1 |

The specific aspects of the forest environment preferred were probed to determine more specifically whether respondents valued anything in particular, apart from deriving an income from the forest. Their answers are set out below in Table 6.10, overleaf

Table 6.10 Aspects of the Forest Environment Especially Enjoyed.

| | n | Percent |
|---|---|---|
| Total respondents = | 116 | 100 |
| | n | % |
| Birds/animals/wildlife | 31 | 27 |
| Pristine/primeval nat values/how natural/ wildness/physical features | 31 | 27 |
| Scenery/looking at it/the views/beauty | 28 | 24 |
| Outdoor activities-hunting/tramping/ walking/fitness | 25 | 22 |
| Solitude/lack of people/away from it all | 21 | 18 |
| The bush /lush/healthy/grew up in it/ admire it/native bush | 20 | 17 |
| The quiet/peace/hassle free | 16 | 14 |
| Trees in flower/sight/smell of flora | 16 | 14 |
| Just being there/amongst it/living/ working in natural environment | 15 | 13 |
| Provides a living/job/working in it | 8 | 7 |
| Easy access to bush/different country/ can go any-time/being near it | 6 | 5 |
| Variety/has everything/scope/interesting | 6 | 5 |
| Feel at home there/bush is my home/ brought up around it | 5 | 4 |
| Nothing especially/not too keen on it | 5 | 4 |
| Lifestyle | 2 | 2 |
| No answer | 1 | 1 |
| Other (1 response per item) | 17 | 15 |

The fauna and "naturalness" of the Coast and its beauty featured prominently, though over 20% especially enjoyed the recreational benefits it afforded and 18% the opportunity it gave to "get away from it all". Seventeen percent spontaneously mentioned the bush (indigenous forest) and this response was probed, as clearly the bush is an integral part of the Coast's physical environment .

A large proportion of those surveyed shot or killed animals for their livelihood and especially liked the indigenous forest environment. The hunting instinct is still very strong in these people, so there is no contradiction in the values they have expressed. This accords with other research findings. For instance, Groome, *et al* (1983) maintained that for the recreational hunter, "the maintenance of a desired natural and social environment is, in fact, central to the user's activities and subsequent motivation to visit". This supported the results of an earlier study which found that recreational hunters had a particular satisfaction with 'aesthetic-religious' dimensions of their visit, including "such things as *beauty of nature*" (Simmons and Devlin, 1981).

Environmentalists are all too ready to condemn West Coasters for the destruction of indigenous forest, as if they were primarily responsible for the failure of sustained-yield

management. However, it is inappropriate to pass judgement on them. They do in fact have a deep appreciation of the animals and their environment.

## 6.4 Summary

There is no single West Coast 'way of life'. From the outside, Coasters' lifestyles may look similar, but there are different forms of social organisation amongst and between groups and an overlap in the activities of animal catchers and trappers and moss harvesters. These latter (primary) groups, are influenced by Vidal de la Blache's site-related factors. A relative degree of independence from natural forces is possible, however, for some users, as will be shown in the following chapter. Nevertheless, whilst differences between groups are discernible, the factor which unites alternative forest-based users is their appreciation of the Coasts' physical environment and social conditions. In the main, they have no desire to move.

The discussion does not indicate whether alternative forest-based groups will adjust to change, but the fact that they are resourceful in seeking out a wide range of jobs, suggests that they are 'survivors'. They were willing to turn their hands to different tasks. Neither does the discussion indicate the attitude they will have to improving their standard of living or to managing natural resources. It has, though, shown how and why alternative forest-based users eke out a living on the Coast. Faced with uncertainty about the future of their activities and market returns, they combined activities and undertook different jobs in order to stay in an environment and engage in activities, most of which they obviously enjoyed. As Simon (1983) would say, they adopted "good enough" rather than "best" solutions: they were not maximising, but "satisficing". Instead of being typified as being opposed to conservation and conservationists, most respondents had a deep appreciation of the environment. As we shall see in the next chapter, they were concerned, however, about being denied a livelihood. These two points could be taken account of by resource decision-makers, as we will discuss in Chapter 7 and 9.

The extent to which alternative forest-based users can adapt to change is taken up in the next chapter. From the perspective of a spectrum of forest-based users, introduced in Chapter 2, it will be seen that there are ways of reducing dependence on site specific factors, but that an escape from them is impossible: management of resources is critical, but not sufficient.

# CHAPTER 7. RESOURCE USE AND MANAGEMENT.

## 7.1 Introduction.

Although it is misleading to speak of a West Coast way of life and to lump together all alternative forest-based users, it was shown in the previous chapter that there were differences and similarities in the way activities were organised. In particular, the animal-based activities and moss harvesting were shown to overlap, whilst the others were distinctly different, confirming demographic differences, noted in Chapter 5. In this chapter, it will be shown that it was possible to combine primary harvesting activities because of the varying time requirements of each and the partial seasonal complementary character of the activities, but that respondents were very dependent on natural cycles. Some respondents adopted strategies to free themselves from these natural forces, by attempting to manage resources. They thus had a greater degree of control over the quantity and quality of their products.

This interaction between alternative forest-based operators, the environment and markets was conceptualised in Chapter 2, by envisaging a spectrum of users, comprising five broad, but not necessarily mutually exclusive groups. At one end of the spectrum were those who harvest resources (i.e. primary users), through manipulators (i.e. some management ), to enhancers (i.e. farming to increase the resource) then to manufacturers (those who used a base product to make other products) and finally to service providers at the other end of the spectrum. For the latter, the resource is the backdrop to their activity, as a service is provided for people. These operators can be conceptualised as including not only those in the questionnaire survey, but also those whose activities are removed from the forest, such as farmers of once feral stock and manufacturers using products or resources originally derived from the forest, as shown below:

Figure 7.1 Spectrum of Users.

| Resource harvesters (primary users) | Manipulators | Enhancers | Manufacturers | Service providers |
|---|---|---|---|---|
| moss collectors | moss producers | moss 'farmer' | | |
| possummers | possummer | | furriers | |
| deer trappers | | deer farmers | | |
| goat catchers | | goat farmers | | |
| venison shooters | | deer farmers | | |
| nurserymen (ponga poles) | nurserymen | nurserymen | | |
| | beekeepers | beekeepers | | |
| | | | charcoal woodworkers | |
| | | | | guides (tourism) service agents |

It will be shown that those at the extreme left hand end of the spectrum were very vulnerable to changes in the natural availability of resources and the vagaries of the market place. They had little or no control over these factors. In order to better manage change, it would be in their interest to move along the spectrum and become farmers, or even manufacturers. However, social, technical, organisational and bureaucratic factors make this difficult, if not impossible for some individuals. In addition, it may be that certain forest-based users would prefer to continue their present unstructured use of resources.

## 7.2 Mode of Operations.

### 7.2.1 Resource Harvesters (primary users).

The majority of alternative forest-based users on the West Coast fell into this category. All the deer trappers, goat catchers, possummers (except one) and a nurseryman taking pongas for poles can be categorised as resource harvesters. All depended, to a greater or lesser degree, on what nature happened to provide. They took resources from the environment without supplementing or increasing them, in contrast to farmers whose actions led to a multiplication of the resource, be it for food, skins or other non-edible products. As most resources were not being actively managed or enhanced, this mode of operation could only support a limited number of people and limited demands on the resource, not growing ones.

The fluctuating employment in the feral deer industry is evidence of this. Deer culling for venison was a large industry until increased harvesting, aided substantially by the use of helicopters, reduced deer populations. Attention then focussed on live deer capture for farming purposes. As deer farming has become established and more and better quality of stock is available on farm, demand for feral animals has waned. As was shown in Chapter 5, it is now difficult to find any full-time deer trappers.

Resource productivity cannot be increased by simply turning a switch or doubling a shift. As there are limits to what nature can provide without management and increased inputs, concern has been expressed about sphagnum moss production. There is a distinct possibility that demand will overshoot supply, leading to rapid resource depletion and possible long term environmental damage. Production probably cannot be sustained at the present high level as moss takes anywhere between an estimated three to seven years to regenerate, depending on locality. Thus, moss harvesters have found that the most readily available moss has been harvested or controlled by other people and that competition for the resource has increased. This has led to a high level of concern (see paragraph 7.3 below). Furthermore, although the costs of moss recovery are not

yet a significant proportion of total cost, they are increasing as the resource is being harvested in ever remoter areas.

Another indication of the dependence of harvesters on natural cycles is provided by their average weekly time involvement each month of the year.[1] Seasonal patterns can be detected, although some respondents carried out their activities outside of these. Thus deer congregate during the 'roar' in April and this is when shooting and trapping reaches a peak. Possums are in peak condition during the winter months, so effort is greatest at this period. However, economic necessity and demand sometimes over-rides the limiting of commercial activity to just this period. Some possummers continue into the summer and autumn when skins are damaged by mating animals (the main breeding season is April-May) even though they are aware that the 'windows' thus created in the fur downgrades the realised price

These activity patterns provide distinct activity 'footprints' which are depicted in Figure 7.2 overleaf. It should be remembered that not all of those involved in moss harvesting can neatly be categorised as harvesters as there are some who are applying rudimentary management techniques, and can thus be said to be resource manipulators. Similarly, although one nurseryman cut and sold ponga poles, he was mainly involved in growing-on plants, so his activity 'imprint' is not included with other harvesters.

1 Respondents were asked how many hours per week on average they worked during each month of the year in each of their alternative forest based activities. Total responses were averaged for each activity group and should be regarded as indicative rather than absolute as figures were based on estimates rather than on documented records.

Figure 7.2 Average Hours Worked

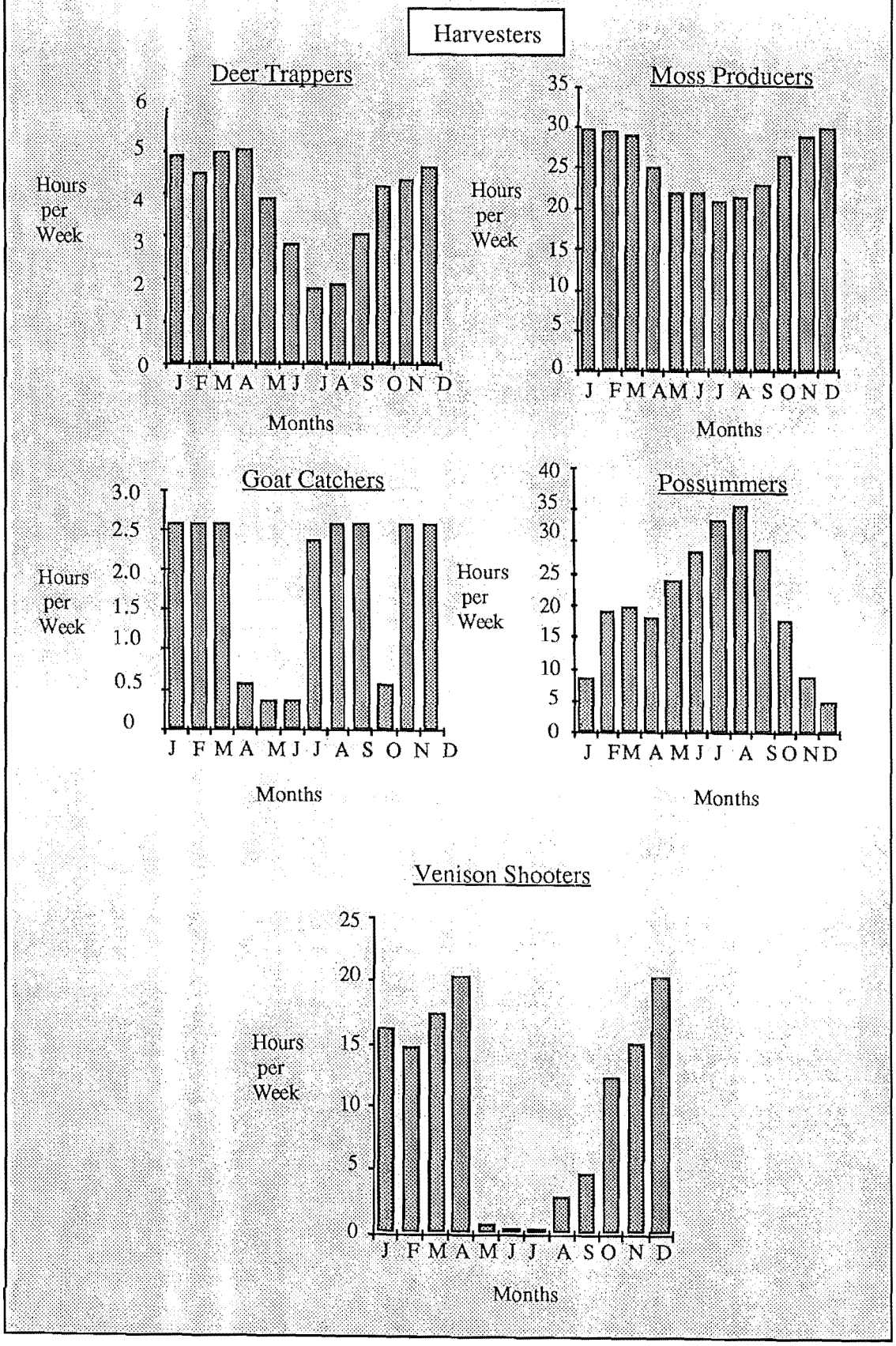

Figure 7.2 also reveals the low time involvement in deer trapping and goat catching and the considerable period of the year when venison shooting is hardly undertaken, in contrast to moss production, possumming and guiding where there is a greater time involvement over the whole year and during each week.

Since so little time, on average, was spent in deer trapping and venison shooting and since the activities were related to different natural cycles, respondents were able to undertake several of them. Thus, possumming fitted in very well with deer trapping and venison shooting and, apparently, with moss harvesting (see Table 6.6, Chapter 6). In terms of aggregate average hours expended during the week, all these activities could have been accommodated by an individual, though there is no suggestion that this was in fact attempted. In fact, certain activities would have taken precedence overs others, such as possumming during fine weather. Possummers would find something else to do, such as checking deer traps, if it was raining, because baits and poisons would be washed out.

### 7.2.2 Resource Manipulators.

Further along the spectrum of use were those who attempted to manage the resource. In the early stages this would be done in a haphazard way, by trial and error. Hence, 22% of moss harvesters surveyed actively took some steps to ensure future harvesting, though this was not based on scientific methods. Most of the beekeepers fell into this category, too, as their attempts at management were not very successful.[2]

Resource manipulators were still heavily influenced by natural cycles, as shown by the beekeepers activity 'footprint' in Figure 7.3, overleaf. Between spring and autumn, beekeepers become busy, as preparations are made for the honey flow and then subsequently during the period when the honey is extracted. Long twilight hours enabled part-timers to do some of these activities during the evenings after other jobs, few of which, however, were other alternative forest-based activities. During winter, the slack period, it was possible, nevertheless, to undertake other forest-based jobs, such as picking moss, though this is not a pleasant time for this activity as conditions in the swamps are cold.

Had economic conditions in beekeeping been more buoyant, average hours worked would have been greater: more time would have been spent on extracting honey, rather than leaving it on hives as feed. Had income been sufficient, there would have been no need to find other work during the winter months. Exhibiting different social and

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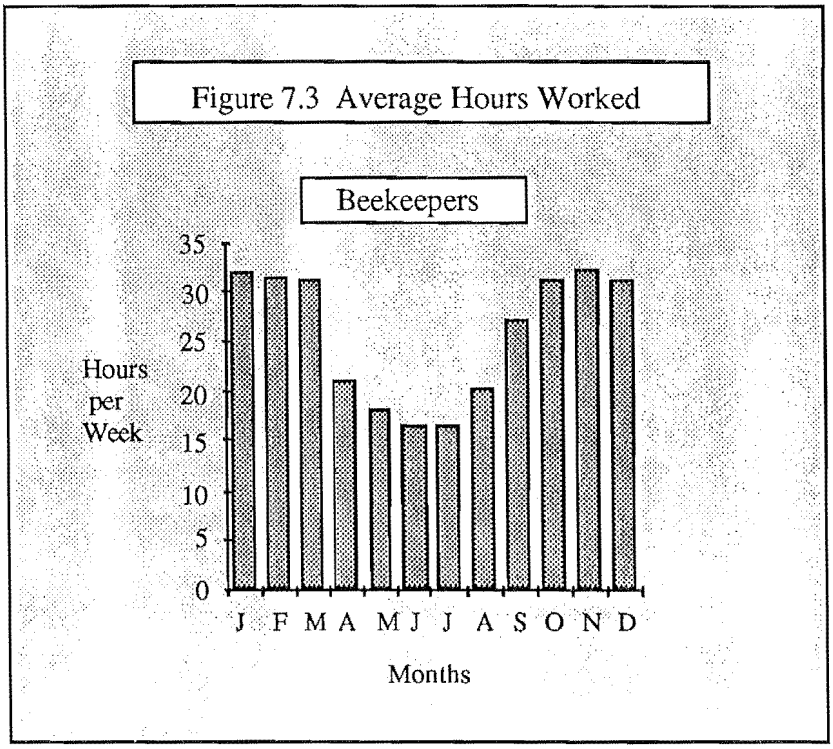
2 Twelve beekeepers (63%) produced less than the average yield per hive for the three years 1984/5 to 1986/87.

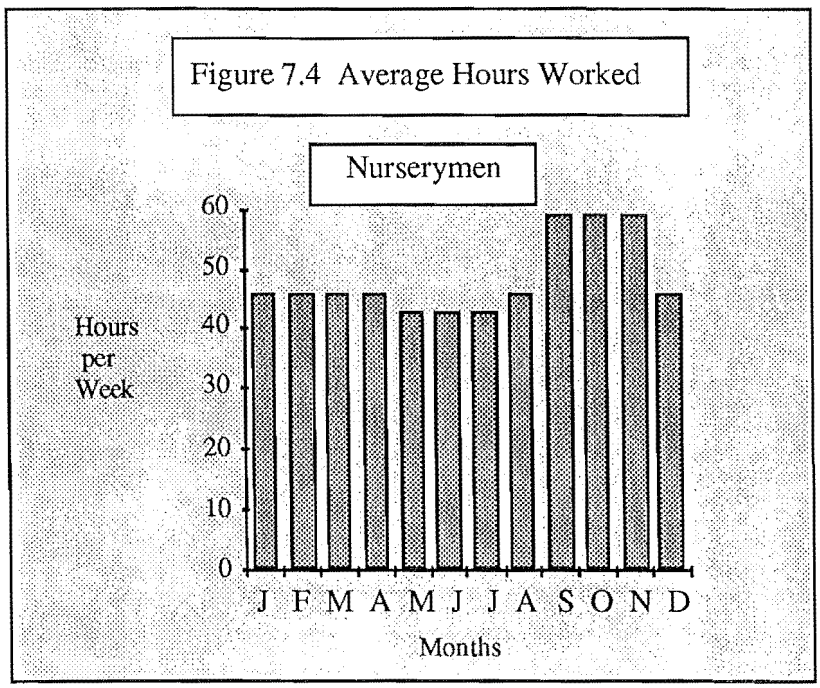
demographic characteristic to animal catchers and shooters, in the main, beekeepers were not inclined to take up their forest-based activities even though they had the time.




7.2.3 Resource Enhancers.

Further along the spectrum are enhancers, who improve resources by 'farming' them. Part of the activities of nurserymen, a few beekeepers and one moss producer fell into this category. Theoretically, enhancement of the resource should reduce uncertainty, as the quantity and quality of stock or product can be more readily assured. However, achieving this state of management is not without its difficulties and, as will be shown, is sometimes impossible or uninviting.

Although nurserymen gathered stock and seed from the forest, they used these mostly to propagate other plants, creating new resources as a farmer would do. Their employment, then, was fairly steady throughout the year, though the busy period coincided with the natural cycle of spring plant growth and market demand, as is evident in Figure 7.4, overleaf.




As noted in Chapter 5, an attempt off the Coast to farm possums ended in failure because of technical problems. Only one Coast-based trapper out of 47 surveyed took any steps to farm possums. Although he produced better quality skins by doing this, market factors forced him to cease operations.

Only one or two moss producers out of 36 in the sample appeared to be doing more than just 'spelling' the resource. They were either actively spreading the 'fines' to encourage new growth and /or experimenting with fertilisers, and might be thought of as prototype farmers. They were acting intuitively, however, and, though their experiences could have been emulated by others, site specific conditions are different in other areas of the Coast. Successful farming of moss awaits more rigorous trials. The present quantity of moss produced is largely limited, therefore, to what is available naturally.

In contrast, a successful transition has been made from feral capture of deer and goats to farming, though farmers of domesticated stock were not part of the questionnaire survey. Ironically (but quite consistent with the concept of the management spectrum presented here) farming reduced the viability of free-range forest-based production, as pointed out in Chapter 5. It was thus no coincidence that 51% of deer trappers in the survey were also deer farmers; their traps often being close or adjacent to their farms. Those who were not farmers supplied the local Coast market in the main, as returns were insufficient to bear expensive transportation costs.

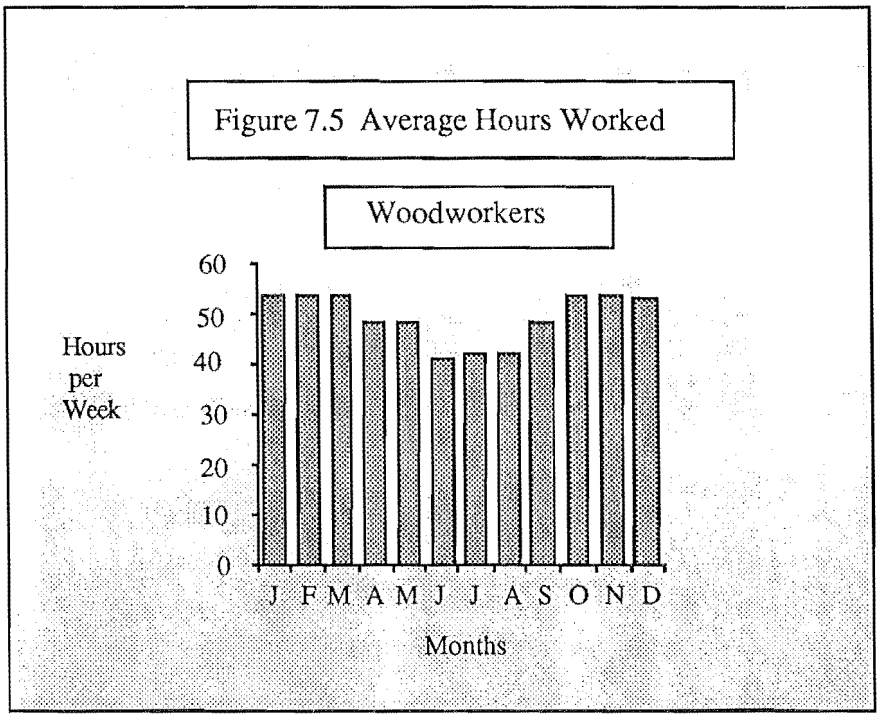
Although the economic viability of deer trapping and venison shooting has suffered, the pleasure of these activities kept some people active. It was also evident that many

beekeepers were continuing their activity mainly for the interest and fascination it brought, as financial returns were poor. They had little commercial incentive to move along the spectrum from being resource manipulators to resource enhancers. One manifestation of this was the leaving of honey on the hive for feed, noted above. Although three beekeepers were known to be in dire financial straights, their compensation was the non-monetary benefits of living on the Coast.

### 7.2.4 Manufacturers.

This group includes the charcoal manufacturer and the craft woodworkers. It was noted in Chapter 5 that they were quite different from other alternative forest-based respondents included in the questionnaire survey. Apart from their different demographic characteristics, woodworkers were not involved in other alternative forest-based activities, except one who was also a very small scale beekeeper (see Table 6.6, Chapter 6). Another reason for the single activity involvement by these respondents was that manufacturing is a labour intensive occupation, as is evident from the activity 'footprint' of craft woodworkers, shown in Figure 7.5, below.

Figure 7.5 Average Hours Worked




Because manufacturing involved transforming an inert forest resource into another product, it was not dominated by natural resource cycles, but by consumer demand. However, the winter fall-off in hours worked by woodworkers can be attributed to the seasonal fall-off in visitor numbers to the local co-operative retail outlets, and other retail outlets during winter. This slight seasonal activity pattern, then, can also be traced back

to an environmental reason: tourist reluctance to visit the Coast and New Zealand during the coldest period of the year.

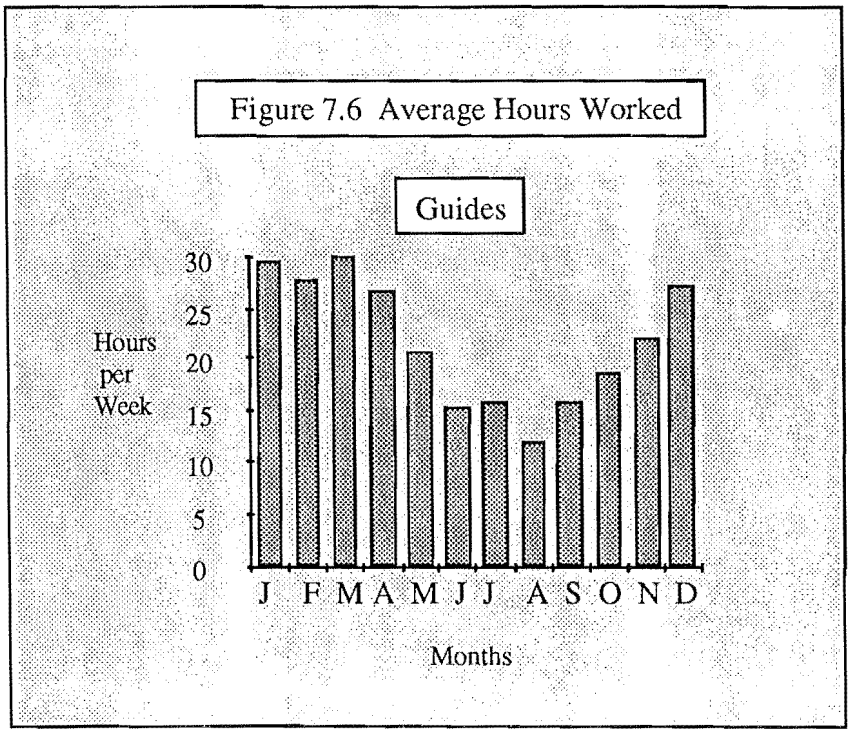
The charcoal manufacturer also worked long hours in the summer months (60 hours per week) but, as demand for barbecue fuel fell-off from May to November he only worked a 35 hour week on average. This reflects not only the seasonal demand for his product, but also the narrow market he catered for. The limited market has deterred other people from taking up charcoal manufacture, and now the major constraint is resource availability, as will be discussed in Chapter 8.

It cannot be assumed that resource harvesters, manipulators and enhancers would take up manufacturing. Woodworking requires very different skills and a different work environment: there is little close contact with the forest and its environment and no excitement of the chase. Woodworking is the creation of something in the mind: animal trapping, moss harvesting and beekeeping produce a relatively unmodified natural product.

7.2.5 Service Providers.

Service providers, such as guides, were a different group again. They did not take resources from the environment, nor did they manipulate them or enhance them to increase the amount available. Although they could not increase the amount of the indigenous forest which they used, theoretically, guides could open-up new areas of use, for instance by taking tourists on new routes. However, their ability to do this was circumscribed by DOC's rules and regulations, as noted in Chapter 5. They were similar to harvesters, in that they did not manage the resource: different to harvesters in that the resource was only a backdrop to their activity, although essential to it.

Since the natural environment was integral to the operation of servicemen, their activity had seasonal peaks and troughs too, evident from the 'footprint' of guides, shown overleaf. This made it possible for three guides to go possumming and one to trap deer.




7.2.6 Summary.

We have seen that most respondents were dependent on what the environment provided, as they were resource harvesters or resource manipulators. The very nature of forest-based activities precluded most of them from being resource enhancers (because they harvested wild resources) but progression to this end of the spectrum, and hence away from being forest-based, is necessary if they are to achieve more stable work conditions, greater resource productivity and quality control. But, they like to "get away from it all" (in the bush) and enjoy working in the forest. However, "getting away from it all" was more related to "being one's own boss" than a reluctance to manage resources.

At the end of the day, respondents still needed to make a living. They had to secure access to the necessary resources and meet consumer demands. They were influenced, then, by bureaucratic policies and market conditions. We shall now see that they had little control over these either. Their actions and personal preferences were compromised by government decision-makers who administered indigenous forest resources, and external entrepreneurs who controlled or manipulated markets and prices of alternative forest-based products.

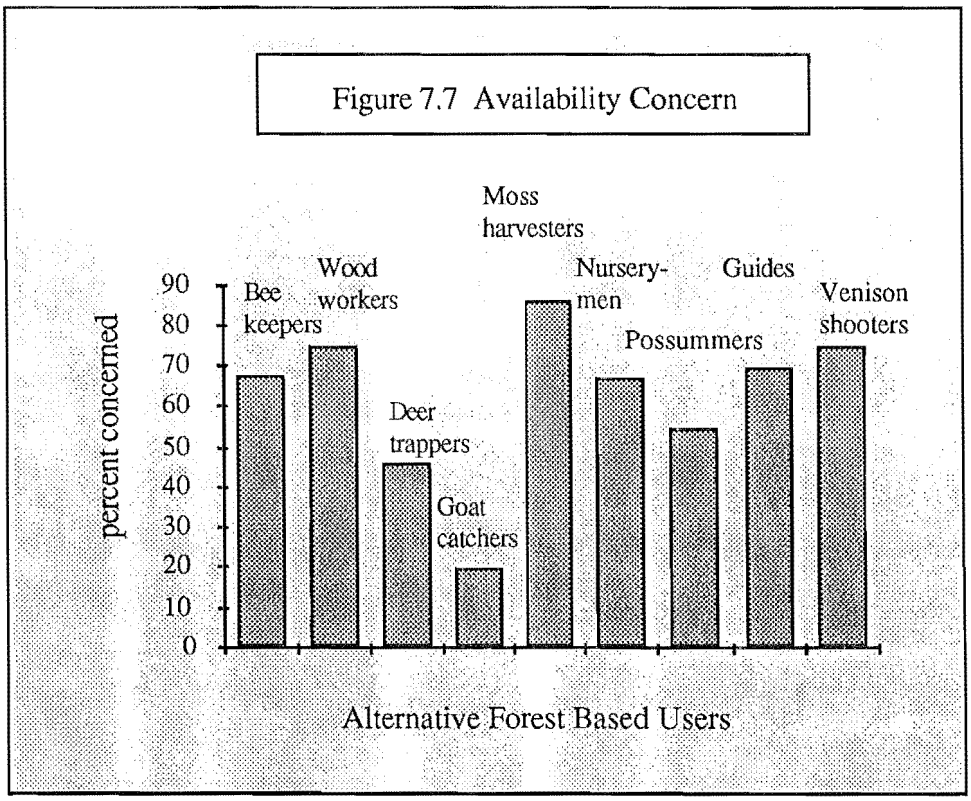
## 7.3 Resource Availability and Management.

### 7.3.1 Access to Resources.

The geographic nature of the West Coast, with the close proximity of indigenous forest to areas of settlement and the seemingly abundant habitat for animals and flora to

support beekeeping, moss, nursery and woodworking industries, may give a superficial impression that resources are readily available. But, in Chapter 4, it was shown that access to resources was mediated by the perceptions and actions of government agents (on behalf of the Crown) resource managers and industrialists who, in their respective ways, disinherited the indigenous population, controlled forest access and usership rights and exploited the land for pecuniary gain. In forests earmarked for 'production', the resource was primarily for timber and wood fibre; in those set aside for 'protection' the aim was to preserve indigenous flora and fauna and conserve water and soil values. Other activities were only allowed if they were compatible with these primary uses.

So, there was a big difference between what commercial alternative forest-based respondents wished to do and what they could actually achieve. Those who were involved in extracting resources (consumptive users) expressed frustration about 'outside' interference in their activities, whilst those who had a more benign use, such as guides and beekeepers, were nevertheless anxious about the state of the indigenous forest. All were worried about the future availability of the resources they used (except the charcoal manufacturer who had recently retired). Their apprehensions were summed up in their responses to the question: 'Do you have any concern(s) about the continued availability of your forest-based resource?' These are shown in Figure 7.7, below.




These concerns need to be taken seriously, as they indicate a lack of confidence in the future. This was particularly marked in the moss industry but also evident in other

activities. Eighty-six percent of moss harvesters/producers expressed some concern about the future availability of the resource.[3] This was the highest level of concern for all the activities surveyed. Reasons for respondents' concerns are presented below in Table 7.1.

Table 7.1 Resource Concerns

| | Beekeepers | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|
| Total Respondents = | 19 | 8 | 35 | 5 | 36 | 3 | 47 | 10 | 8 |
| | % | % | % | % | % | % | % | % | % |
| Access/availability/if World-Heritage/resource locked-up | 11 | 63 | 11 | 0 | 36 | 0 | 6 | 30 | 38 |
| Royalties/rentals/bonds/prices | 21 | 25 | 17 | 0 | 11 | 0 | 9 | 10 | 13 |
| Exploitation/clearfelling/ unsustained harvesting | 32 | 0 | 6 | 0 | 22 | 0 | 0 | 0 | 0 |
| Keeping roads open/ physical access | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Resource getting scarce/ depleted | 0 | 0 | 0 | 20 | 14 | 67 | 0 | 0 | 0 |
| Admin arrangements/policies/ management | 0 | 0 | 0 | 0 | 31 | 0 | 13 | 10 | 13 |
| Monopoly/control of resource | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 25 |
| Elimination of resource/search-and destroy/use of 1080 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 50 | 13 |
| Other | 5 | 0 | 11 | 0 | 3 | 0 | 2 | 0 | 0 |
| Not concerned | 32 | 25 | 54 | 80 | 14 | 33 | 45 | 30 | 25 |

The 'locking-up' of forests and environmentalists' pressures to have South Westland nominated for World Heritage status aroused considerable concern, especially amongst craft woodworkers, moss harvesters/producers, guides and venison shooters. It was feared that alternative forest-based uses would be prevented or severely curtailed.

3 Responses are a combination of two interpretations of availability: that relating to the quantity of the resource available; the other to access to that resource. These are discussed in greater detail in paragraph 5.5 for each activity.

Although these fears were justified by woodworkers, as logging on State land will not now be permitted south of the Cook river, the World Heritage Convention only provides guidelines for the management of World Heritage areas and the continuation of most activities will be possible. However, these will require very sensitive management to ensure that intrinsic natural values are not compromised. So, alternative forest-based users will not be entirely free to do as they choose, but they will not necessarily be prevented from continuing their activities if South Westland becomes a World Heritage area. Detailed management would be the responsibility of the New Zealand Government. However, respondents had little confidence in the bureaucracy being able to manage forest resources satisfactorily.

The adoption of the Blakeley committee's recommendations and the reorganisation of government departments also threw doubt on the continuance of timber production. Hence, beekeepers were concerned about the closure of forest tracks and thus access to their beekeeping sites. Some policies were seen to be ludicrous, such as the edict by DOC that no driftwood should be collected from beaches in South Westland, in order to prevent beach erosion. At the same time, only one small private sawmill existed, logging on private land and there was a moratorium on logging from State forests. Such policies did not endear the new Department to most West Coasters.

DOC however was in a cleft stick. Although its mandate was heavily preservationist, local managers recognised that some accommodation of commercial aspirations was necessary too. They chose to interpret the Conservation Act relatively liberally, despite early misgivings about the continuation of many activities (Tilling, 1988c). However, they could not satisfy all alternative forest-based users. Some wanted action to prevent unsustainable harvesting, exploitation and irreversible damage caused by browsing animal (32% of beekeepers and 22% of moss harvesters, see Table 7.1, above): others (possummers, guides and venison shooters) were opposed to attempts to eradicate introduced feral animals. As explained in Chapters 1 and 4, finding the 'balance' between competing positions is a matter of judgement and is inevitably political. There will always be 'winners' and 'losers': satisfied and disatisfied parties.

While new policies were being devised (and many are still not finalised) short term decisions were being made by DOC. They continued to renew licences to take forest resources on a month by month basis. This has persisted for the last two years and in some cases (such as moss harvesting) is a carry-over from the NZFS. Thus, access to many of the forest-based resources was not guaranteed. Timberlands (Forestry Corporation), on the other hand,entered into a long term agreement with Colyer Watson

to process all the moss on Timberland's land on the West Coast.[4] Part of the agreement is that licensed harvesters have to sell their moss to Colyer Watson, as discussed in Chapter 5.

It was not surprising, therefore, that there was a paucity of management by harvesters and resource manipulators. They did not have control of forest-based resources or unrestrained access them. As noted above, in some activities this disinclination to enhance the natural resources they used was compounded by poor monetary returns. In these circumstances, it should not be surprising if many resource users 'make hay while the sun shines'. They would be irrational or altruistic not to. But, as Hardin (1977) contends:

> *In the intimacy of small groups altruism may be substantial and important; in larger groups enlightened egoism is the most powerful motive. It is in fact the best motive we can rely on.*

Especially when people are poor or desperate, they act out of self interest, though poverty is not the essential cause of egoism (Hardin, 1977).

The ramifications of this argument may seem unpalatable. Although access was not open, as depicted in the classic tragedy of the commons situation discussed in Chapter 2, the underlying truth is still germane: unless the level and rate of demand for resources is sensitively managed, either by resource users themselves and/or by an external authority, the resource can be severely and sometimes irreparably damaged. The difficulty of following this maxim needs some elaboration.

### 7.3.2 Resource Management.

Despite the fact that access to most forest based resources was limited and controlled by government agencies, it was still difficult to fulfil one of the assumptions of the tragedy of the commons model: that use can be permitted up to the resource's carrying capacity. The problem is determining what the maximum carrying capacity is and ascertaining what the optimum should be. If elimination of introduced animals is a goal, clearly the optimum will be zero. But what if animals, such as possums, cannot be exterminated, what then is a socially tolerable level and how does this compare with a level which will provide a commercially viable catch rate? If control of harvesters is necessary, what is an equitable allocation of the resource? Who should benefit and who should be deprived of an income?

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4 Colyer Watson is a subsidiary of Mair Astley Holdings, a commodity trader handling a claimed 5% of New Zealand's exports (Kelly, 1988).

The history of the West Coast has numerous examples of resource exploitation. The clearance of lowland indigenous forests has already been discussed. Another recent example is the helicopter recovery of deer and venison in the 1970's and early 1980's. Armed confrontations, sabotage and poaching were not uncommon. Although this did not achieve the desired management goal to eliminate deer, numbers were drastically reduced. As a result, the condition of the forest has improved. However, it is now only marginally economic to trap and shoot deer and an increase in deer populations has already been noticed. So, who is to control these animals, especially now that the Government has introduced cost-cutting and 'user-pays' policies? The reduction in herd numbers and a selective extermination programme in national parks has also affected the potential for safari hunting. Similarly, the present open block management of possums in the frontal hill country, allowing a free-for-all scramble, is unlikely to lead to the decimation of the resource and makes individual trapping success more difficult. Whilst animal numbers may be reduced, thus satisfying the resource manager, this does not ultimately benefit the possummer. As animal numbers decline, more and more juvenile animals are caught and the possummer is tempted to extend trapping into the mating season when skins are damaged. Prices are thus affected and harvesting becomes less viable. A vicious cycle then eventuates: but without the possummer, the control of these animals entails public expenditure. DOC has belatedly recognised this problem, especially with their trimmed budget. It used four private possummers in 1988 to control animals in the Deception valley of Arthur's Pass National Park. 6000 skins were taken under a scheme which paid a cash bonus over and above the return on the furs (*The Press*, Christchurch, 17/12/1988). The inducement was necessary to get the possummers to work the remote, difficult country. This is in line with recent research results which reveal that private unsubsidised possum trapping is cost effective compared with 1080 poisoning in areas where access is easy, but less cost effective in more remote areas (Warburton and Morgan, 1988).

As discussed in Chapter 5, the harvesting of sphagnum moss and ponga poles are the only major alternative forest-based resources on the West Coast which appear to be threatened by over exploitation. The high price of moss and the more than favourable financial returns, coupled with uncertainty over future access, encourages exploitation. A number of locally owned processing factories have changed hands as externally based organisations such as Newmans, Wilson Neill, Prime West and Colyer Watson have monopolised the resource. Financial gains, for those with access to the resource, has been considerable and it may well be that local processors have 'creamed-off' the profits, in line with Fife's (1971) observation that not everyone suffers from the ruination of the commons. The new factory owners have evidently not found the moss industry as rosy as they had predicted: unconfirmed reports suggest that Prime West

was running its factory at about half capacity in 1987-88,[5] and local moss pickers claim that there is not as much moss available in South Westland as Colyer Watson was led to believe. The difficulty in obtaining moss has induced one of the last remaining sizeable independent local processors only to dry and pack on contract to an externally based company and to think of selling-up completely. All this highlights a lack of resource information, on which to make sound business decisions.

### 7.3.3 Resource Information.

One of the biggest limitations to better management is the paucity of resource information. For instance, as sphagnum moss was not recognised as a legitimate commercial use on the NZFS estate until the closing years of the Department's existence, no resource inventory was completed, although growth and yield trials were commenced. A number of reports were prepared which recommended further research (Thomas, 1985; De Goldi, 1984 and 1987) but little progress was made. With the establishment of DOC and 'user-pays' policies, moss producers were requested to contribute about 25% of the cost of further research by the Department of Scientific and Industrial Research (DSIR). They declined. DOC claimed that they did not have the financial resources or personnel to do the job. No one knows for certain, then, the availability of moss or what constitutes a sustained yield. DOC must be aware of the problem as it is looking into this. Present requirements by DOC, Landcorp and Timberlands for concessionaires to harvest on a sustained-yield basis would then be laughable if the future yield of moss was not so uncertain.

The information on possums is also woefully inadequate. A generalised map of the distribution of possums on the West Coast is available, but specific information is limited to the catchments were infestations have been particularly bad. It is difficult, then, for individual possummers to ascertain what catches are likely to be: they have to find out by trial and error. Knowledge about the frequency and distribution of possums in certain heavily infested catchments is better, as a result of targeted surveys (see, for instance, Pekelharing and Reynolds, 1983). With such surveys, it has recently been possible to contract specific possummers to reduce animal numbers and to determine how effective they have been in the Deception river valley, Arthur's Pass National Park.

All that is known about red deer (*Cervus elaphus*) is their general distribution and the fact that numbers are now low. Although there are reports that numbers of animals are now on the increase, details of the frequency and distribution of these animals is lacking. There is also a general knowledge of the distribution of fallow deer, *Dama*

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5 The company has since gone into receivership, though it was its property and financial dealings which mainly suffered from the stock market crash of 1987.

*dama*, (Clarke, 1976) but detailed, up-to-date, information is not available. Maps are available for the distribution of Himalayan thar (*Hemritagus jemlahicus*), but these are now dated (Parkes, 1984; Parkes and Tustin, 1985). No details of the distribution of feral goats for the whole of the West Coast is available.

The lack of up-to-date, comprehensive surveys of resources, other than for timber, has arisen out of the narrow focus of the NZFS and DL&S. The objective was not to manage animals for commercial purposes, but to control the damage to flora in the worst affected catchments and in national parks and reserves. Consequently, the information that has become available has not been adequately inter-related to existing and potential commercial activities. Since the latter have also been neglected, inter-relating the information has been made more difficult.

Commercial information on alternative forest-based activities has been practically non-existent (such as the state of beekeeping and craft woodworking) reflecting the lack of priority given to these activities by Government departments. A bonanza of commercial activity raises the need for resource information, but, by the time the wheels of action turn, irreversible damage to the resource has often occurred (see for instance Rose, Pekelharing and Platt [1988] on the damage to rata by browsing animals on the West Coast).

Without adequate resource information, planning is impossible.

## 7.4 Conclusion.

In this chapter it has been shown that it was possible to combine a number of activities, but that it was easier to do this at the resource harvester end of the activity spectrum. As more management was applied to an activity, greater time and effort was required and hence those respondents who did this successfully tended to be occupied full-time.

The very nature of some activities precluded the management of resources. Trappers had no control over the animals they caught and were not given exclusive right to them, except for those possumming in the high country. As open-block management was the norm in the frontal country, and as there was a lack of resource information and doubts about future access to other resources, many forest-based users took all they could get. Furthermore, as pointed out in previous chapters, NZFS's and subsequently DOC's policies were to keep animal numbers as low as possible, not to manage them for commercial yields.

Some successful transitions had been made along the spectrum of use, for instance by deer and goat farmers, so that greater control over the quantity and quality of resources

had been achieved. However, this opportunity was not available to all users, nor necessarily a sought after option. Some activities remained very different from others and would unlikely attract other forest-based users.

Despite management efforts, alternative forest-based users were, in one way or another, still influenced by the natural environment for their livelihood. Even manufacturers could not escape its influence. Furthermore, since most the products of their activities were traded in distant markets, which were controlled by externally based organisations, their independence was circumscribed. The irony is that although many cherished their freedom to 'do their own thing', in reality they were very vulnerable and dependent.

In the following chapter we will see what further options they have and what the implications are of a continuation of present Government policies.

# CHAPTER 8. ALTERNATIVE USE POTENTIALS.

## 8.1 Introduction.

Up to now we have considered alternative forest-based users and activities in an historical context of changing events and fortunes, bringing the reader up date with the present situation. We have noted the nature and character of West Coast producers and their relatively insignificant position in their respective industries. Government decision-makers mediate and control access to resources and government attitudes and policies had a significant impact. Externally based commodity traders monopolised local, primary forest-based activities, but even they were powerless in influencing international prices, which affected the viability of West Coast activities. Whilst these issues were of justifiable concern to alternative forest-based users, they are not unique. Many small, isolated communities and producers the world over are in a similar predicament and are faced with a common question: how to bring about a more stable and secure future?

As we have seen, responses to this question depend on many factors. Some have an immediate or near immediate effect, over which alternative forest-based users may be able to exert some influence. Others are more remote in time and place, such as climatic changes or the state of international markets. The effect of these factors may be critical, but may be beyond the control of West Coasters or even central government decision-makers. However, it may be possible to minimise some of the risks involved in different operations and hence be in a better position to weather the storm of rapidly changing conditions. The ability to do so will depend on whether there is a conducive political, economic, social and physical framework within which activities can be pursued. This depends on the attitude of central and local government, institutional arrangements and specific policies, as well as the attitudes and efforts of the individual forest-based users themselves and those servicing them. By reviewing these and expected conditions, we will be in a better position to suggest alternatives and to assess whether these are possible.

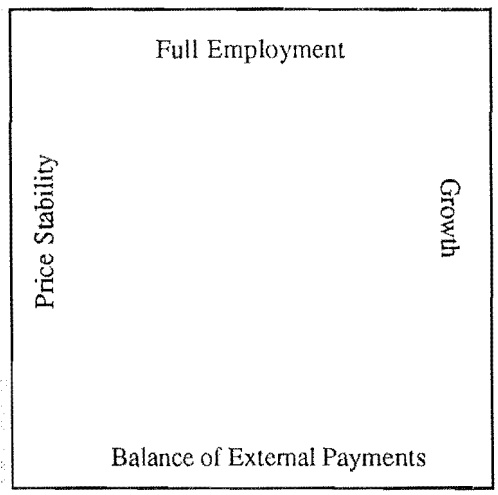
Thus, before considering the potential of forest-based activities and the prospects for commercial users, it is necessary to discuss the likely policy environment within which alternative forest-based users will have to operate.

## 8.2 A macro view of New Zealand policy.

As discussed in Chapter 1, the Fourth Labour Government inherited an economic crisis in 1984 and has since been very single-minded in dealing with the situation. Despite recent economic improvements, this emphasis looks likely to continue. The key,

according to the Government, is the control of inflation: all else follows. Thus, a bill was recently introduced into Parliament to change the charter of the Reserve Bank, charging it solely with achieving "price stability", removing other objectives such as employment and economic growth (*The Press*, Christchurch, 25/7/1989). Maybe Simon (1983) is right: decision-makers can only focus on a narrow range of issues at any one time. Undoubtedly there is some truth in the Simon's concept of bounded rationality and though this might be offered as an excuse for the Government's approach, its sacrifice of employment indicates that it was not ignorant of the dilemma of Kuczynski's Magic Square, shown below: all four sides cannot be solved simultaneously, as a change in any one element has an effect on at least one of the others (Rosenberg, 1986).

Figure 8.1 Kuczynski's Magic Square




Source: Rosenberg, 1986

The conundrum of the magic square epitomises just one set of interrelated issues, and, to be fair, there is no optimum solution. At best, all we can hope for is some sort of balance of the elements we are trying to control. This is more a matter of judgement than an exact science. And so, even with monetarist laissez-faire government policies, some manipulation of the economy is necessary and has in fact taken place.

Trade-offs are inevitable. The present Government became unpopular mainly because it put too much emphasis on a narrow range of financial measures, which it pursued too swiftly and severely, with little significant improvement for most of the electorate.[1]

But, as the new Minister of Finance said when introducing his first budget to Parliament on 27 July, 1989:

> *....the country is entitled to know the targets or objectives the Government is working to and expects to attain. To that end the previous Minister of Finance announced in April last year the objective of achieving 0-2% inflation by the early 1990's. In December 1987, New Zealand's public debt stood at around 75% of GDP. At the time the Government announced its intentions of repaying a third of the outstanding public debt by 1992, in part through a programme of business or assets sales.*
>
> *Tonight I want to reaffirm both these objectives and to add two further specific goals. By December 1992 the Government expects to have achieved:*
>
> * *An inflation rate of between 0-2%;*
> * *The reduction of public debt, from a combination of business sales, SOE loan repayments and fiscal surpluses, to below 50% of GDP;*
> * *As a result of sustained low inflation and reduced public debt, first mortgage rates of between 7-10%;*
> * *The reduction in the number of people unemployed to below 100,000* (Caygill, 1989).

Once these targets are reached it is assumed that New Zealand exports will be competitive, markets will be won and the economy will boom. And thus it follows that:

> *If we cannot meet such objectives, then we cannot hope to recover the standard of living we once used to enjoy compared to the rest of the world. We also cannot hope to achieve the standard of social services or the harmony, the openness and vitality that is our birthright* (Caygill, 1989).

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1 In the end this led to irreconcilable differences between the Minister of Finance, Roger Douglas and the Prime Minister David Lange. The former 'left' Cabinet in December 1988 but mounted a campaign against the P.M. The newly appointed Minister of Finance continued with his predecessors policies, but, with inflation reduced to 4.4% and with signs of an improvement in the economy, asserted that his first budget gave greater emphasis to social services. Public opinion polls showed a marked improvement in Labour's fortunes, with the National Party's lead being cut back to 6%. However, Lange had previously given a pledge to allow caucus to vote for the two positions vacated by Douglas and the former Minister of SOE's, Prebble. This vote was take on 3 August, 1989, reinstating Douglas to Cabinet (but not Prebble). Four days later, Lange resigned. Lange was quoted as saying:

> *I've been true to Labour's tradition and the putting behind us of flirtations with lunacy and prescriptions for economic rationalisation which are, in terms of people, a recipe for disaster* (*The Press*, Christchurch, 8/8/1989).

A contributing factor for Lange's departure was said to be his health (he had heart surgery in July 1988). Nevertheless, he has accepted the non-Cabinet position of Attorney-General and Minister of State in the new administration led by Geoffrey Palmer. Douglas has been appointed Minister of Police and Minister of Immigration.

However, less than three weeks after the budget speech, new economic forecasts from the Reserve Bank were less optimistic. It predicted that registered unemployment would rise and stay at approximately 160,000 (11.9% of the labour force) for the next two years and fall to 139,000 in March 1991, as lower economic growth is expected and the balance of payments deteriorates again (*The Press*, Christchurch, 15/8/1989).[2] If this forecast proves accurate, the country cannot hope for much relief, despite the Government's optimistic mood and the claim that it has now turned its attention to social policy (as if this can only follow, in serial fashion, from what it sees as a successful economic policy). Given this prognosis and the claim by the National Party that Labour has stolen its policies, we should not expect much change in approach if National wins the general election next year.

As far as environmental policy is concerned, the Labour Government has implemented policies from which the previous administration had shied away. For instance, it finally tackled the issue of indigenous forest logging on State land. Again, its approach has been single-minded. Nevertheless, the National Party has not declared that it will reverse the South West New Zealand World Heritage nomination (which is being prepared at the moment) or overturn the indigenous forest allocations north of the Cook River. It supports the Government's proposal to sell State 'production' forests, but wants more control over buyers to ensure against a "one-off cash deal to foreign owners", and to ensure that forests are replanted (*The Press*, Christchurch, 18/7/1989).

While environmental laws are at present under review, the Conservation Act is not included and there are no indications that the Act will be changed to clarify the apparent anomaly between the preservationist thrust of the legislation and the evident accommodation of multiple-uses. The Resource Management Law Reform is being undertaken by a committee of officials in the Ministry for the Environment. Preliminary proposals were recently aired by the the Minister for the Environment, who suggested that regional authorities' statutory planning functions will be restricted to the physical environment (Ministry for the Environment, 1989a).[3] Statutory regional economic and social planning, which was attempted by some present regional authorities (regional and

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2 There was a balance of payments surplus of $48 million for the year ending June 1989, the first such surplus since December 1983. However, commentators point out that part of the reason for the surplus (which is a provisional figure) is due to suppressed domestic demand and that if the economy recovers, the balance of payments is likely to go into deficit again (*The Press*, Christchurch, 18/8/1989).

3 With the review of the structure and functions of local government bodies, water and soil conservation and physical planning will be the responsibility of single regional authorities: the WCUC will become the West Coast Regional Council (WCRC), incorporating the Westland Catchment and Regional Water Board.

united councils) will not be required.[4] The inappropriateness of including such policies in statutory regional planning schemes now seems to be recognised. Although physical planning cannot be divorced from social and economic planning, central government has shown no inclination to provide a national-regional framework of integrated policies. It proposes one-dimensional national resource management strategies to guide regional resource management policy statements (Ministry for the Environment, 1989a).[5]

The National Party has not opposed these regional changes, except to declare that it would go along with the wishes of the electorate if it desired change. Like the Labour Government, it has no firm position on the devolution of central government funds to regional authorities. Since their funds will come from directly rating property owners and not from taxes, their revenues and economic potential will be limited. How the WCRC would finance its interest in making a bid for indigenous timber production forests thus remains to be seen.[6] National's position on the review of environmental legislation is unclear, as this matter has not reached the stage of a Parliamentary bill.

If there were a change of government, then, it seems unlikely that there would be fundamental changes in policy which would change the Crown's approach to resource management, although the National Party purports to believe in even less intervention in the economy than does the present Government.[7] And so the debate about future government policy hinges, in the short term, on the manner and degree of intervention. The main preoccupation of government is likely to continue to be the economy: keeping a tight reign on expenditure in order to keep inflation in check.

This emphasis on financial and economic matters is evident in the ranking of Ministers in the new Cabinet. The Prime Minister retains his portfolio of Minister for the Environment. This appears to give the environment matters a high priority as the Ministry for the Environment advises the Government on physical and natural resource

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4 For examples see Canterbury United Council's Regional Forestry Strategy, Objectives and Policies (CUC, 1985) and the West Coast United Council's draft forestry scheme (WCUC, 1985).

5 Once prepared, these regional statements will be binding on other regional and district plans for matters of regional significance. It is significant that the Crown does not intend to be bound by these policy statements, in contrast to the intent of present legislation, successfully challenged by the Crown (see WCUC v. Prebble *et al*, 1988).

6 Details have still not been finalised for the sale of the State's indigenous forests allocated to timber production, even though an agreement in principle has been reached with Maoridom clearing the way for the sale of cutting rights in State (exotic) plantations (*The Press*, Christchurch, 20/7/1989). It could be that a deal will be struck with the WCRC (WCUC) and the Poutini Ngai Tahu to take over the beech resource as compensation for the withdrawal by the Crown of a promise to plant up to 10,000 ha of mountain ash (*Eucalyptus regnans*) shining gums (*E. nitens*) and Australian blackwoods (*Acacia melanoxylon*) in South Westland.

7 The regulatory economic policies of the former National Government of Sir Robert Muldoon, together with the subsidies to a few privileged groups, the escalating overseas debt created by 'Think Big' projects and the fueling of consumer spending finally created an untenable position.

policy issues. The Ministry, however, only deals with issues which have implications for the whole of New Zealand or where help is needed to resolve conflicts (Secretary for the Environment, 1989b). It is not a general clearing-house, resolving competing or conflicting economic, social and physical policies or development proposals. Any such conflicts are resolved by Cabinet as a whole, with inputs from various sources, of which the Treasury has been the most prominent. The Deputy Prime Minister is Minister of Health and Minister of Labour. The third Cabinet position is held by the Minister of External Relations and Trade, who is also Deputy Minister of Finance. This reflect the high priority given to maintaining and improving New Zealand's access to overseas markets. The Minister of Finance holds fourth rank and the Minister of SOE's, who is also a Deputy Minister of Finance, Minister of State Services and Minister of Railways is ranked fifth. The hierarchy is dominated, then, by those responsible for finance, trade and the economy. The Minister of Forests is ranked fifteenth and the Minister of Agriculture and Fisheries, seventeenth. The Minister responsible for Conservation (and hence DOC, which controls at least 75% of the land area of the West Coast and approximately one-third of New Zealand) is ranked twenty second and is not a member of Cabinet, just behind the Minister of Tourism, who is also outside the Cabinet. (In total there are 24 Ministers). Thus, the land-based portfolios are split and lowly ranked, except Environment (*The Press*, Christchurch, 15/8/1989). This allocation of portfolios reflects the mobilisation of bias in our society to economic and financial management and the low priority given to the mainspring of our wealth: the physical environment.

In reality many of these portfolios are interrelated and it is short sighted to split them into separate boxes and try to deal with single elements in isolation, even though it may be expedient to make Ministers responsible for the delivery of specific services, such as social welfare. However, the difference between service delivery and the interdependence of different government responsibilities needs to be recognised. Sound physical environmental policies, for instance, will prove to be sound social policies too.

The change in leadership and re-allocation of portfolios is designed to take the Government through to the next general election in November 1990, so we cannot expect any imminent changes in responsibilities or the adoption of a more integrated approach to decision-making in the short term.

Against this backdrop, we can now discuss the critical elements of alternative forest-based activities. This highlights certain limitations, but also possible avenues for future action which we can assess in the light of government policies and attitudes which seem probable in the short term.

## 8.3 Activities and actors - Critical elements and implications.

### 8.3.1 Beekeeping.

As we have seen in Chapter 5, the beekeeping industry on the West Coast is struggling with poor financial returns, despite the abundant sources of nectar from the forest, whilst running costs and investment in plant and machinery are relatively high. Depressed world honey prices, the prejudice against the stronger tasting kamahi honey and the narrow range of beehive products and services offered by Coasters have all combined to produce poor sales receipts. Pollination services are rare. Comb honey is difficult to produce because of the high fluidity of rata/kamahi honey and little is done to separate-out the different floral types. One or two well established beekeepers pack for the local West Coast market; otherwise, bulk sales are the norm.

Lessening these deficiencies will require commitment, foresight and considerable effort. But this is an older group of forest-based users, some of whom were either retiring, when the survey took place, or subsequently trying to sell-up. What is necessary, though, is dynamic leadership . While 56% of the group receive less than half of their income from beekeeping, and hold other jobs, it will take considerable will-power to find the time and energy to devote to the wider questions of survival in beekeeping.

The reliance on a narrow range of beehive products and services makes West Coast beekeepers very vulnerable to the vagaries of the bulk commodity market. Although the differential between lighter and darker grade honeys has narrowed in the 1988-89 season, this may change when honey supplies increase again. West Coast beekeepers will obviously have to maximise the distinctive advantages that the natural environment gives them: a range of floral honeys, which can be justifiably marketed as coming from pollution-free forests; and greater yields per hive than the New Zealand average.

An example of the potential of non-clover honey is provided by Tasmanian, which is very similar in its isolated position, rural economy and forest cover to the West Coast of the South Island. Approximately 75% (631 tonnes) of the State's honey production in the year ending March, 1987 came from leatherwood honey, derived from leatherwood (*Eucryphia lucida*) rich rainforest (Australian Bureau of Statistics, 1987). The factors responsible for the significance of this industry are not available, but warrant further investigation, as they may offer some lessens to West Coast producers.

Unfortunately, browsing animals, principally possums, now threaten the rata/kamahi resource on the West Coast. Rose, Pekelharing and Platt (1988) found that about 20% of all canopy trees in the 83,000 ha rata/kamahi forest between 500 m elevation and the

tree-line (c. 900 m), from the Haupiri river east of Lake Brunner to the Mahitahi river in South Westland, were dead:

> *Less than 30% of these forests showed only light canopy mortality (<10% dead canopy trees). Canopy mortality was moderate (10-30%) in almost 60% of the forests and heavy (30-50%) or severe (>50%) in the remaining 12%* (Rose, Pekelharing and Platt, 1988).

A distinct gradient of mortality damage was found. This was least severe in the small western frontal catchments immediately east of the Alpine Fault and most severe in the catchments further east. The reason for the lower mortality in the eastern catchments is not easily explained, although it was concluded that these areas are in a 'post dieback' phase, having suffered more severely between 1950's-70's. It was noted that possums were liberated west of the Alpine Fault and have since moved towards the heads of main valleys. This progressive invasion is put forward as the reason for greater current frontal canopy mortality in the southern part of the study area (Karangarua-Mahitahi) than in the central (Taramakau-Karangaroa) or northern parts (Haupiri-Taramakau). [Possums are still invasive south of the Fox river, and have already peaked in many places further north]. Hence, the southern part of the region is the least affected by possum damage (8% overall canopy death), compared with 19% in the central study area and 24% in the Haupiri-Taramakau area. This is very unwelcome news for the beekeeping group, seven of whom operate in the latter area. Of the 27 major catchments studied, the worst affected areas, where no areas of "light" canopy mortality were found (<10% overall canopy death), were the Hokitika or Taramakau catchments: the former had an overall canopy death of 44%, whilst the latter was found to be 31% (Rose, Pekelharing and Platt, 1988). Another two beekeepers operate in this area, in addition to the seven between the Taramakau and Haupiri catchments.

Rose, Pekelharing and Platt (1988) concluded that overall:

> *the rata/kamahi resource in Westland has been widely depleted and .....imminent shifts in forest composition can be expected in at least 12% of the resource currently showing heavy to severe canopy mortality.*

Evidence from other studies show that of the palatable trees preferred by possums, rata (*Metrosidersos umbellata*), suffered the second most defoliation damage to Hall's totara (*Podocarpus hallii*), [Pekelharing and Batchelor, in press; Rose, Pekelharing and Hall, 1988]. In the Taramakau (Pekelharing and Batchelor, in press) shrub and ground cover have also been extensively modified by red deer and chamois (*Rupicapra rupicapra*). A "reduction in seed source in these areas indicates that these two species (southern rata and Hall's totara) will be neither as abundant nor as extensive as they were before dieback".

The long-run beekeeping potential, then, is being severely reduced. Unfortunately, the commercial significance of this has apparently been undervalued. The study by Rose, Pekelharing and Hall (1988) suggested priorities for possum control based either on minimising further canopy damage or, alternatively, on maintaining representative areas of relatively unmodified forest in central Westland. Whilst there is no doubt that priorities should be set, these should be based on wider considerations, such as the commercial needs of beekeepers, not to mention tourism. For instance, the former may place greater priority on the most easily accessible areas of rata, rather than on whether an area is representative of unmodified bush or not. Thus, priorities for control suggested by Rose, Pekelharing and Hall (1988) are too narrowly based and may need to be modified. This illustrates the importance of interrelated studies and the need to take account of wider values.

Honeydew is another resource which merits closer attention. Honeydew honey already commands a significant premium on the West German market, yet its potential is hardly realised by the West Coast beekeepers interviewed, except as a source of beehive feed. This has not always been the case. In a mid 1970's report on the effect on the beekeeping industry of the proposed Beech Scheme, thirty six beekeepers were found to be maintaining 4628 hives in the area. Thirty one of these beekeepers were West Coast residents, 20 of whom were classified as hobbyists (with 1-50 hives each). The five non-residents had 595 hives in the area, but it was stated that this figure varied considerably from year to year: in the 1970/71 season alone, one beekeeping enterprise transported 500 hives to Westland to produce feed honey (Ministry of Agriculture and Fisheries [MAF], n.d.).

However, more work is required to ascertain the extent and viability of the honeydew resource on the West Coast. It is known that beech forests in the Reefton, Inangahua and Murchison areas have been used for honeydew honey production (MAF, n.d.) but no detailed survey has been carried out. One beekeeper interviewed, who has attempted to produce honeydew honey in the area, reported a lack of pollen in autumn. This requires verification and, if true, suggests that supplementary planting of suitable pollen bearing species should be considered by resource managers. Furthermore, there have been problems with wasps, which are spreading into the West Coast Region. They are known to monopolise the honeydew resource for 3-4 months of the year, even in a moderate wasp year, and to result in a massive loss of revenue for the beekeeping industry (Clapperton, *et al*, in press). The interaction of the beech scale insect (*Ultracoelostroma assimile*) which produces the honeydew, and the fungus and fauna which feed on it, is a complex web, and is being investigated at present by the DSIR. But, it requires further research (Moller and Tilley, 1986; Moller, 1987). It appears that

high density beekeeping in honeydew forests may have some unwanted environmental impacts, although, at present, these are thought to be slight and relatively minor compared to that of wasps (Moller, 1989). Funding for this extra research is vital, but the DSIR has found it difficult to finance long term programmes when the emphasis is on short term research which have a seemingly higher, immediate economic pay-off.

Another concern is a possible revival of beech utilisation for timber. The impact of such a scheme on the potential for honeydew honey could be severe. Much would depend on the silvicultural and management regime adopted. Wardle (1978) suggests that clear-felling, with the retention of some shade and seed trees, would produce intermittent honeydew yields, building up to peak yields towards the end of the forest rotation. The establishment of a mixed-aged forest, on the other hand, with artificial establishment of seedlings, rather than natural regeneration, would probably produce more regular and heavier honeydew yields. This requires further study.

There are many other ways that beekeepers could diversify their output. For instance, approximately 8kg of wax is produced per tonne of honey harvested. Whilst some of this is sold, to be reconstituted as foundation (wafer-thin sheets, stamped in hexagonal patterns, which the bees 'draw out' to form combs) it could be used to produce a wide range of products, such as balms, candles and beeswax (Brunt, 1984). However, large scale manufacturing may not appeal to beekeepers, as a different lifestyle is involved. On a smaller scale, though, it could be a winter job, when the demands of beekeeping are slack. Other possibilities are to process and pack honey locally, instead of sending bulk honey to co-operatives in Canterbury. Some beekeepers would find it difficult to diversify or process and pack their own produce because of the size of their operations. They need assistance and advice but they are in no financial state to pay for this. Unfortunately, the restructuring and reorganisation of government departments has left only one MAF apiary adviser in the South Island, at Gore in Southland! As he has now resigned, the position is to be relocated in Christchurch, but there will still be only one apiary advisory officer for the whole of the South Island (Smith, 1989). West Coast beekeepers would find this service far too expensive to use, even though the charge-out rates of $60 per hour plus disbursements are comparatively reasonable. Beekeepers will, then, have to rely on their friends or the local West Coast Branch of the National Beekeepers Association for help. The financial analysis has shown, though, that they have little expertise in business management, marketing or market research.

### 8.3.2 Deer, Goats and Game Management.

The heyday of deer trappers, goat catchers and venison shooters now appears to be past. There is little that they can do if they wish to maintain a commercial interest, but to move

along the spectrum of use and become farmers themselves (if they have not done so already). Whilst it is arguable that prices are cyclical and will improve once more, the increase in farmed animals, and associated marketing challenges, will probably keep the pressure on prices. Furthermore, the Game Industry Board's marketing strategy will work against feral venison producers. Consumers in West Germany, once under the impression that farmed venison was from feral animals, are now being educated to accept farmed venison in preference.

The decline in stock prices will make it easier for deer trappers and venison shooters to become farmers and build up herds. As noted in Chapter 5, half of the deer trappers were already engaged in deer farming. This gateway to deer farming can be expected to continue. Nevertheless, if all work was carried out by the trapper himself, land, yards and fencing costs would be a minimum of $20,000-40,000, for a 10 ha unit. If the unit was stocked with 50 purchased hinds, this would cost an additional $15,000-$20,000: less if the animals were trapped personally. Notwithstanding, a deer trapper could probably establish himself as a deer farmer on the West Coast for half the cost of doing so in Canterbury. But, even after getting established, it is difficult to earn a 10% real rate of return on investment at present (James, 1989). In fact, long term profitability and market signals have been uncertain for over a year (*The Dominion*, Wellington, 22/4/1988: p.17), with changes in tax and the high New Zealand dollar, which has only eased in the last three months.

Thus, unless a trapper or venison shooter was building up his own farming unit, the future for these forest-based activities looks grim. (Much the same could be said about goat catching).

But, the options for commercial deer recovery are now claimed to be so limited that it has been suggested that the industry will have to be restructured, to give sole-operator blocks of sufficient size to provide full-time employment. It has been suggested that there would be 12-15 blocks for the whole of New Zealand and that these would be allocated by tender. Contracts would be let for approximately five years (Challies, 1989).

This proposal is still tentative, but arises out of a review of the wild animal recovery industry by the Forest Research Institute, Christchurch, for DOC. Challies (1989) states that:

> *The basic premise in the review was that wild animal recovery should be managed to give lowest sustainable deer densities and that the best way to do that would be through increased efficiency.....The industry's efficiency could be substantially increased by improving its commercial environment and economies of scale and by eliminating direct competition for deer. This would, in effect,*

> *return it to a profitable full-time business, albeit for a smaller number of operators* [author's emphasis].

As there would be a smaller number of operators, this proposal is not the most equitable. It is unclear whether deer trappers are considered to be part of the "industry" and no mention is made of how recreational hunters would be accommodated. Even though the latter are not commercial operators, they directly compete for the resource. Considering the small number of blocks for the entire country, how many would there be for the West Coast? And, how is efficiency to be measured - solely in relation to attaining the lowest sustainable deer densities commensurate with sufficient profit for sole operators? What if the economics of deer recovery change during the five year contracts? How are we to determine what an acceptable profit level is to be?

Restrictive allocations might be necessary if there were no other options. Yet, there are others: safari hunting and recreational hunting. But, as noted in Chapter 5, attempts are being made to exterminate game animals in national parks and a buffer zone around them suggested, squandering the potential to derive income from the safari hunting of these animals.

The game management issue, therefore, reflects a conflict of values: between those who wish to eradicate or reduce game numbers to the lowest possible levels in order to protect biota, and those who advocate management for commercial gain or for recreational interest.

The principal legislation governing wild animals (the Wild Animal Control Act, 1977) is now administered by DOC and is subject to the Conservation Act, 1987. As noted in Chapter 1, DOC's mission is to protect the environment, allowing only activities which are consistent with its preservationist role. Although there is no specific mention of wild animals in the Conservation Act, the legislation has been interpreted to be implicitly opposed to introduced animals (Holloway, 1989).[8] Acknowledging that extermination is not a feasible option, DOC is seeking to determine levels of acceptable animal impact.

> *The acceptable level will be the lowest impact achievable with the resources available, provided that that does not put at risk the wild animal management tools (the commercial and recreational hunter) available to the Department.*
>
> But: *the department's position is that, throughout the estate, the level of wild animal population, that should be the goal of management, is the lowest level that can be achieved and maintained in the long term.....*(Holloway, 1989).

In some specific areas, where practicable and feasible, this means that an endeavour will be made to remove some or all wild animals (Holloway, 1989).

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8 Holloway is Director of Estate Protection, DOC.

Although DOC recognises the importance of commercial (including safari) hunting, its attitude towards recreation hunting undermines the whole basis of game management:

> *No resources will, however, be allocated for the management of animals for recreation as an end in itself. Accordingly, the department has withdrawn from Forest Service programmes whose objective it was to increase in number, or in quality, wild animal herds on conservation land* (Holloway, 1989) [author's emphasis].[9]

As at least 75% of the West Coast is 'conservation land', and the department controls approximately 90% of indigenous forests on the Coast, the implications of this statement are far-reaching. However, there could be instances which might require herd improvement or maintenance above levels achievable by other means, for instance:

> *where the retention of hunter interest in a particular herd would optimise conservation values on the estate as a whole by limiting or negating any requirement for other management expenditure* [my emphasis].
>
> *It is conceivable, in these circumstances, that trophy quality may be an objective of management compatible with the maintenance of a pre-determined level of acceptable impact. Such management should, however, be a responsibility of the beneficiaries, acting under a delegation from the estate manager....*(Holloway, 1989) [my emphasis].[10]

The linking of game improvement to those circumstances which might lead to savings of expenditure by DOC, and the shifting of the onus of management to the "beneficiaries" (conceived as solely being the users of the resource) reflects the distortions caused by tight budgets and the narrow perspective of the Department.

If the owners of the estate, i.e. the Crown, abrogate their management responsibilities, how can they expect recreational hunters, who have even fewer financial resources, to do it for them?[11]

Salmon (1989) the Director of the Maruia Society, suggests, however, that recreation hunters may have to help pay for the vegetation surveys and animal control operation that are necessary, if they do not want to see their present free and easy mode of operation taken over by overseas safari hunters, who could afford to pay thousands of

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9 According to Holloway (1988) forest managers in the NZFS were able to accept higher animal numbers in some localities, "if such a population was desirable for recreation hunting, provided that the good land use criterion was not breached". "However, the Conservation Act establishes higher standards of proper land use in terms of the protection of natural values than did the Forests Act".

10 This is consistent with user-pays policies in other government departments too, forcing them to raise an increasing proportion of their revenue from private clients. Such policies have led to a stalemate in research (e.g. in the moss industry), resentment and non-cooperation with government departments.

11 This approach is consistent with that followed by DOC for the management of sphagnum moss, discussed in Chapter 5. The onus for finding, harvesting on a sustained-yield basis and partly contributing to research costs was put on producers.

dollars to hunt in New Zealand. Salmon is not opposed to recruiting the help of recreation and commercial hunters to protect indigenous biota, but is opposed to commercial goals becoming paramount. He also opposes changing extermination clauses in statutes, even though they might not be readily achieved at present, as these are ideals. He sees no reason, though, why more achievable intermediate goals, such as the lowest sustained-yield, could not be adopted.

The Director of Conservation of the Royal Forest and Bird Protection Society of New Zealand (RF&BPS) is opposed to the Crown trying to make a "profit" from its activities and saw the imposition of a $30 licence fee for the hunting of sambar deer in the Manawatu in 1988 as setting a precedent, leading to an elitist, highly regulated sport:

> *For deerstalkers this is a disaster. For conservationists, it is likely to discourage hunters from controlling deer and is hence bad news for our native plants and animals* (McSweeney, 1989).

This protectionist stance by RF&BPS led McSweeney (1989) to deride:

> *....Deerstalkers Association officers who have championed the development of a deer bureaucracy through promoting senseless recreational hunting areas, deer breeding programmes and now the concept of a national licence to perpetuate their own bureaucratic futures .*

The stance of deerstalkers "to close up certain areas to commercial hunters and to let animals breed back up again" (McSweeney, 1989) was also criticised by commercial operators who claim to have done an excellent, unsubsidised job of keeping animal numbers down and, therefore, to be opposed to any regulation of the industry: "deer and chamois are impossible to control without helicopter hunting" (Wallis, 1989). This may be true in the high country where access is difficult, but indications are that recreation hunters can adequately control deer numbers in easily accessible areas, in the absence of either commercial operators or official control (Fraser and Batchelor, 1989).

However, Parkes (1989) states that thar could be maintained at low to modest densities, depending on objectives for different land types, without jeopardising conservation values. He has calculated sustained-yields for different tenures of land, which would not, he concludes, be attractive to commercial operators, but would maintain an equilibrium in animal numbers with increased effort from recreationalists and safari hunters. Otherwise, DOC would have to spend at least $4.5 million over a decade in a technically and legally doubtful eradication programme. The Department could control animal numbers, though, at the equilibrium level relatively cheaply.

Nevertheless, Caughley (1989) asserts that control has become an end in itself in New Zealand. This has led to a perpetuation of management practices, which are either

impossible to achieve (eradication) or, in most cases, to justify on ecological grounds, or even to monitor, as they are based on imprecise objectives. (Has a mobilisation of bias evolved in animal control operations too?).

### 8.3.3 Possumming.

If the deer industry looks bleak, the possum industry looks dead. There are even fewer options available. Cage-finishing is uneconomical, skins cannot be sold, and the fur has a lowly position in the market. The Koreans monopolise the resource, and, with cheap labour, can re-work the fur for the garment trade.[12] New Zealand furriers cannot compete in the mass market and have endeavoured to cater to the top end. However, the Koreans are becoming more skilled too (Taylor, 1988). Despite all its lobbying efforts for fairer world trade, the New Zealand Government is powerless to prevent the Koreans monopolising the possum fur trade, and it can do virtually nothing to influence consumer preferences for different types of fur. It can just implore exporters to diversify their markets, which is easier said than done.

Nevertheless, the Government could provide a better resource management framework, as open-block management does not help the beleaguered possummer. The West Coast is the only place in the country were this open system applies. It may appear to be equitable, but since harvest numbers are insufficient to encourage full-time commitment, it is ultimately inefficient and discourages newcomers and seasoned trappers alike. In these circumstances, individual block allocation can be justified, providing the trapper with a greater guarantee of harvest. However, this highlights the apparent conflict of interest between resource managers, who want to see animals eradicated or controlled, and hunters who want to make a living from the occupation. A closed-block system is seen by some of the former as encouraging 'farming', with possummers maintaining rather than controlling animal numbers. But this is a shallow argument, as it should be the duty of resource managers to determine the frequency and condition of animals and to monitor the effectiveness of possummers.

At the moment there is little encouragement to go possumming. Should this continue, possum populations will go largely unchecked, except for the availability of habitat. This will create greater headaches for resource managers, who will have to offer financial incentives to encourage trapping in the frontal hill country as well as the more rugged high country. Otherwise, more publicly funded control operations will be

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12 Furs are cut into long strips and machined back together again. This enable longer lengths to be produced and facilitates colour matching.

necessary. But, as we have seen, the Government is unlikely to be able to allocate sufficient funds for this.

8.3.4 Moss Harvesting and Processing.

Market dominance by Japan, access to the resource and sustained-yield management are the three dominant critical issues in this activity. Early collective attempts to foster research and agree on an export pricing policy have dissolved: the Sphagnum Moss Association is in recess. There is now a lack of cohesion and agreed direction.

The statutory mandate of DOC to preserve natural values rather than act commercially and make 'profits', creates conflicts when linked to tight budgets and 'user-pays' principles, which dictate that revenue be squeezed from resources that can be charged for. Furthermore, if DOC continues to place the onus for management on resource users, (Holloway's [1989] "beneficiaries"), then the future will be tortuous and management unfulfilled. Resource rentals are not an unreasonable burden to be borne by those who make large profits, but how are these rentals to be determined? Without adequate resource inventories and growth and yield models, it is impossible to determine sustained rates of harvest, reasonable resource rentals and long term prospects.

A percentage of resource royalties could be allocated to research, but under tight budgets there is a danger that this money will instead go into a consolidated fund to keep the bureaucracy afloat.

The two other major land owners, Timberlands and the Land Corporation have a statutory mandate to make profits, and, accordingly, have been allocated resources which, in the Crown's view, do not merit preservation. Except for two areas of podocarp forest in South Westland, there is no statutory obligation to manage on a sustained-yield basis. Furthermore, these two SOE's are in no position to undertake research to sustain their resources even if they wanted to, as they are in the process of being privatised. The Crown has decided to sell its timber resources, but not the land, which will remain in public ownership. If this process is extended to sphagnum moss, the resource could be sold. If the Government follows the stance it has adopted with its plantation resource, there would be no covenants on the purchaser(s) to manage on a

sustained-yield basis.[13] How this would affect the joint venture that Timberlands has with Colyer Watson is unclear, but the latter must be regarded as having the inside running to secure ownership of the resource.

The future, then, is largely in the hands of the owners of the resource (not the harvesters working on contract). The onus is on them to undertake the necessary research and to act in unison if they want to combat the monopoly power of the main buyer, Japan. In the past, the Government has stepped in when exporters were working against each other and set up government sponsored marketing boards. But it has only done so where the export value has been considerable (e.g. in the kiwifruit industry, where exports are worth several hundred million dollars). Moss producers could voluntarily seek the help of an existing government marketing board.

### 8.3.5 Nurserying.

West Coast indigenous forests provide ample supplies of plants and seeds for propagation in local nurseries. The West Coast has a natural climatic advantage: conditions that can, though, be artificially created closer to market outlets and away from the West Coast, albeit at a cost.

The West Coast will continue to be an important source of indigenous stock, but plant breeders and growers elsewhere in New Zealand and overseas are experimenting all the time to produce new varieties. Many New Zealand nursery plants lack colour, though, and there is potential to introduce more colour through hybridisation. The variegated forms of flax (*Phormium tenax*), for instance, are popular. The potential is enormous, but hardly realised by New Zealand nurserymen (see *Commercial Horticulture*, May, 1987:16-21). Meanwhile, overseas producers are stealing a march on New Zealand nurserymen, promoting plants such as pittosporum as being ideal as a bonsai for indoor use, as a bush and as a standard plant. Furthermore, since the oil shocks of the 1970's, European research into low heat variety species has intensified: coprosmas could apparently fill this niche, but are virtually unknown by the world's pot-plant purchasing public (*Commercial Horticulture*, June 1988, p.7).

More research is required into New Zealand plants, as technical information and cultivation techniques are generally lacking. Markets are being lost through ignorance of consumer preferences: fashions are constantly changing (*Commercial Horticulture*,

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13 The Minister of Forests has publicly stated that it is unlikely that buyers of State plantations would be forced to replant as this would be interfering in commercial decisions (*The Press*, Christchurch, 13/8/1989).

March 1987, p.14-17; *Commercial Horticulture*, June 1988, p.7). West Coast nurserymen, though, are in no position to finance research.

There is little that West Coast producers can do about these trends as their operations are too small scale. Those that just take plants from nature can only offer what nature provides. As pongas are harvested on shorter and shorter rotations, they will not have time to grow to the firmness and size that the market requires. The technique of growing tree ferns and exporting them without soil to Europe has, however, previously been perfected in the Buller (Science and Technology Assessment Group, 1982). It is possible to propagate tree ferns, though spores do not have long term viability. This is being done in Stewart Island (Given, 1989).

There is quite an interest on the West Coast in exporting tree ferns and products derived from them, such as bowls. However, this is now prohibited, unless the tree fern has been artificially propagated. The Trade in Endangered Species Act, June 1989, became New Zealand's instrument of accession to the Convention on International Trade in Endangered Species (the CITES Convention). This Act prevents the import, export and re-export of endangered species, which includes tree ferns, orchids and palms. It does not affect trade within New Zealand (Olthof, 1989; Given, 1989).

Plant harvesters are not as versatile as plant breeders: whilst there is nothing wrong with natural varieties, the consumer has come to expect a range of choice which is not necessarily influenced by the hardiness of the plant or the fact that it is seed sterile. Plants that die are thrown away and replaced. Harvesters can only keep pace with demand if wild plants are plentiful. As demand increases, they will have to become resource enhancers: artificially propagating plants to keep abreast with the market and to overcome export embargoes on endangered species. Coasters have little option but to target markets close at hand and, at the very least, keep abreast with consumer preferences.

### 8.3.6 Charcoal.

Large scale charcoal making on the Coast is dependent on increased logging. This will not now eventuate in podocarp forests. However, the long talked about beech scheme would entail logging, but whether there would be any residual wood for charcoal making remains to be seen. As this scheme is in limbo, the two charcoal makers that presently exist will have to rely on present timber production allocations (which expire in 1989, pending extensions) unless they have access to the meagre private resource.

8.3.7 Craft Woodworking.

The lack of a reliable and sufficient income is the most important issue in craft woodworking at the moment. Consequently, greater attention to marketing and the containment of costs are important. In time, woodworkers should write off establishment costs, or sell some assets to ensure greater profitability. The availability of skilled workers was not cited as an issue by woodworkers surveyed. However, three woodworkers were interested in training apprentices and one is busy at present establishing a work programme under the auspices of the Department of Labour.

Only two of the woodworkers interviewed plan to increase the scale of their operations, but since this was from a small base, increased employment opportunities cannot be expected from existing woodworkers. Extra jobs would only eventuate from new start-ups, which the above work scheme might encourage, though its *ad hoc* nature will probably not produce a significant increase in activity. Whilst the availability of the resource gives a potential for a major craft industry on the West Coast, the potential has hardly been scratched, as is apparent when comparisons are made with the Tasmanian woodcraft industry.

Tasmania has a large forest resource and has experienced environmentalist pressure to reduce logging and wood-chipping. Whilst major battles have recently been waged over the protection of South West Tasmanian forests, an agency of the State Government, nearly a decade ago, commissioned a major study:

> *to examine all factors relevant to the establishment of an organisation structured on applied research/design (and possibly production and marketing) lines designed to provide the focus for the development of a more balanced and skills intensive use of forest resources in the area of manufactures wood products and systems* (Sinclair, 1979).

The report which resulted made specific and detailed recommendations to broaden and diversify the wood-using industry: to produce and market specialty products. Information on whether these recommendations were taken-up is not to hand. Nevertheless, in recent years craft woodworking has emerged as a significant activity, developing into the largest sector of the State's craft economy. An estimated 70 full-timers and 200 part-timers were engaged in this activity in 1987-88. Annual sales were estimated to be Australian $5 million (Forestry Commission of Tasmania, 1988).

If the West Coast craft industry is to achieve anything like this significance, clearly a great deal remains to be done to encourage more people to take up woodworking and to find markets for craft products.

8.3.8 Guiding.

The main issues for those involved in game recovery have been discussed above. This leaves those who are involved in horse trekking, back-packing and nature appreciation. For them, exposing visitors to the delights of the bush is the most important requirement, come rain or shine. There is no doubt that bad weather does discourage the motorised brigade, who do not want to walk too far. Hence, West Coast tourism needs to be marketed to those who wish to enjoy the natural environment.

8.3.9 Complementary Activities.

Whilst the prospects for some alternative forest-based activities do not look bright, others may fare better by being re-oriented and linked to activities with common attributes and market niches.

There is no doubt that the West Coast is becoming renowned for its scenery and natural attractions. Sixty four percent of all visitors to the Coast (domestic and international) in the year ending March 1988 went there for a holiday or for leisure purposes (NZT&PD 1989a; 1989b; 1989c) and the West Coast earned nearly $100 million from tourism in 1988 (*The Press*, Christchurch, 6/4/1988). Furthermore, visitor nights have been forecast to increase by 22% between 1988-93 (NZT&PD, 1988c). The latest tourism theme for the Coast is one suggested by a Pacific Asia Travel Association task force in 1988: they considered that an appropriate theme should be "the interaction of people and nature" including the story of the shifting balance of these elements from early settlement (PATA/NZT&PD, 1988). Nature-based tourism is also favoured by environmental groups, such as the Royal Forest and Bird Protection Society (*The Press*, Christchurch, 6/4/1988) and is strongly supported by the Government.

Craft woodworking, safari hunting and guiding all exploit the tourism market and so have a common interest. Beekeepers could also link into this market. Dr Richard Buchanon, of Massey University, has already made a recommendation (at the National Beekeepers Conference in 1987) that New Zealand honey ought to be marketed as a healthy and uncontaminated, nuclear free product (*The Dominion*, Wellington, 24/7/1987): the crop he was promoting probably comes mostly from pastures laced with superphosphate and herbicides! What, then, could be purer and more natural than honey derived from the unpolluted natural forest of the West Coast? The product is distinct. One or two small jars of honey have been seen for sale in the Punakaiki Craft Co-operative, but these were much more expensive than similar sized packs in local supermarkets, and were not well displayed or attractively packed. Notwithstanding, this link with the craft industry could be enhanced, as one small-scale beekeeper reported

that he sold all of his crop in pottery containers. Furthermore, wax candles and balms have a craft tradition, and although beekeepers may not have the skills or inclination to become craftsmen, others may take up the challenge if sufficiently encouraged.

A resurgence in the traditional use of flax by the Maori in Hokitika could also be tied into this market too. Flax (*Phormium tenax*) used to be the basis of a large industry in New Zealand before synthetic rope and string displaced it. Large swampy areas which were ideal for flax were cleared for pasture. Though this has occurred on the West Coast, there are still areas were flax is prolific. Although some of these areas are on private land close to access routes, other areas are in wetlands where ecological values are being assessed by the Department of Conservation.[14] Nevertheless, flax was one of the most useful plants to the pre-contact Maori and recently there has been an increased use of it by the Maori in Hokitika as part of a re-awakening of interest in Maoritanga. A Maori Access Scheme has enabled weaving skills to be taught to local people, with flax cut for ketes and tukutuku panels. The finished articles could not be sold as this is a publicly funded scheme, and the emphasis has been on training. Whilst this training has important cultural benefits, the possibilities of realising some economic returns could also be investigated and linked with a stronger Maori theme for the West Coast tourism, if this is acceptable to the tangata whenua.

Too much dependence on tourism could be detrimental, however. It is not necessarily a panacea for the development problem of the Coast. As observed in Chapter 5, it is seasonal and has recently experienced a down-turn. Furthermore, tourism is a relatively benign use of indigenous forests only if properly managed. Questions can also be raised about its long term sustainability, since it is dependent on the use of scarce, non-renewable resources. International tourism is especially profligate in the use of these resources. It is also a volatile market. The development of domestic tourism could bring greater security by lessening the effect of global factors, such as currency exchange rates, over which New Zealand has little or no control. Although domestic tourism accounts for 64% of present visits to the Coast, much remains to be done to overcome its seasonal nature.

Beekeeping and horticulture also have potential for a symbiotic future. Although the latter is also in an embryonic state on the West Coast, there are possibilities for greater development on better soils around Karamea and between Westport and Granity. Parts of these areas are frost free in winter and have comparatively high minimum

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14 An attempt was made, with the help of a kaumatua of the Poutini Ngai Tahu of South Westland to record the known flax areas as a start of a wider study of the incidence, importance and potential of flax. DOC subsequently decided to undertake this survey, but plans had to be shelved as budgets were cut back.

temperatures in winter (Science and Technology Assessment Group, 1982). As yet only a limited amount of market gardening has eventuated around Westport, and small horticultural enterprises have been established in Karamea, providing a local beekeeper with some income from pollination. However, there are a number of disadvantages which have militated against the Buller becoming more important for horticulture: distance from market and attendant high transport costs; competition for land from dairying, whose fortunes are presently good; and the high rainfall and humidity which increases the risks of plant diseases. However, the quality of fruit produced in the region has been good and the domestic West Coast vegetable market could be developed (Science and Technology Assessment Group, 1982).

### 8.3.10 Climatic Change and Forest-based Activities.

In the very long term, the climate of the West Coast will change as a result of increasing concentrations of greenhouse gases in the atmosphere. Whilst it is difficult to predict the effect on New Zealand of global warming, the Ministry for the Environment has been developing scenarios to examine the type and magnitude of likely impacts of change. Two scenarios have been developed: a 'most likely scenario' and an 'alternative warm scenario'.

The 'most likely scenario' for the West Coast would see a rise in the mean annual temperature of $1.3^0$C and the frost free season increasing by 30-35 days, making areas north of Hokitika frost free. Annual rainfall would increase by about 10% as a consequence of higher intensity storms, causing higher runoff. Sunshine would decrease by about 100 hours per year and strong gale south-westerlies would decrease (Ministry for the Environment, 1989c). Under this scenario, temperatures for early produce could be better, but other regions in the country would also fare better too, off-setting any regional advantage. Increased rainfall would not be conducive to beekeeping or possumming, but much would depend on seasonal and diurnal variations. Moss might grow better!

The 'alternative warm scenario' is based on an assumption of frequent incursions of tropical air from the north and a decrease in westerlies. Average rainfall in coastal areas along the West Coast would decrease by 5% and by 10% in the Southern Alps, with fewer rainy days. Annual sunshine would increase by 150 hours and there would be a marked decrease in wind strength from the southwest (Ministry for the Environment, 1989c). These conditions would be more favourable for beekeeping, animal-based activities and guiding.

As detailed climatic changes await more sophisticated modelling and more detailed regional information, we are forced to be speculative about the impact of these scenarios. However, they are illustrative of the long term changes over which Coasters and New Zealander's have little control, like so many of the other factors affecting the viability of alternative forest-based activities.

## 8.4 Paradigm shift.

It is apparent that the Government, resource managers and forest-based users are part of wider global processes, which have an impact at the local level, even though the connection may seem tenuous. Thus, the beekeeper suddenly finds that the price he receives for bulk honey is affected by the policies of the US Government, even though he may only sell his product on the domestic market. Or the price of venison falls and demand dries up because of the fear of radio active contamination. Nations and individuals can no longer act independently. Even if we adopted a closed-door trading policy, we would still be affected by global environmental changes, which have ramifications for our future welfare. This realisation has prompted international efforts in recent years to tackle global issues which affect mankind. This effort has redoubled in the last five years as catastrophes have escalated in magnitude and frequency

New Zealand has taken an active role in international forums to discuss and take action on these issues. It has pushed for a nuclear free zone in the South Pacific, and recently took part in an international conference to reduce ozone depleting substances. Along with several other countries it has decided to go beyond the Montreal Protocol and phase-out chlorofluorocarbons (CFC's) by the year 2000 (Minister for the Environment, 1989b). Subsequent to signing the Declaration of the Hague on global warming and ozone depletion in March 1989 (Ministry for the Environment, 1989b) the Minister of Finance allocated $2 million in the budget to facilitate research into the implications of global climatic change (Caygill, 1989). Furthermore, following the concern about sustainable development (World Commission on Environment and Development, 1987) resource sustainability is going to be one of the cornerstones of the forthcoming resource management statute, though how the Government plans to achieve this remains to be seen. In Chapters 4 and 5 it was shown that holding the view that sustained-yield management is important is one thing, achieving it is another. Legislation alone will not be enough.

For there is a paradox. New Zealand is part of the world body of trading nations and has adopted a neo-classical view of development, which directly conflicts with its stated concern for the environment: the very system itself is based on mass consumption, profligacy, built-in obsolescence and waste: hardly a recipe for a long-term sustainable

future. In view of this, can it really be concluded that the Government has the well-being of the country at heart, as it claims?

As Falk (1983) says: "no amount of tinkering can fix up the present international system". New Zealand's exports are dependent on consumption by the rich countries of the world. Attempts by the US to balance its budget, live within its means and reduce its voracious consumption of natural resources, is, therefore, contrary to New Zealand's short term economic interest. To survive in the cut-throat world of international trade, New Zealand exporters are encouraged to produce high value, low volume goods, by processing raw materials prior to export. These are not directed to meeting the basic needs of three-quarters of the world's population, who live at or below the subsistence level.

Selling the idea that New Zealander's should make do with less would be politically difficult for the Government. It would have to be a long term strategy, because those who have most benefited from 'Rogernomics' have been the affluent.[15] Since the marginal rates of tax were reduced in October 1988, the top 20% of the population earning more than $37,000 p.a. had a 9% increase in real disposable incomes in the last quarter of the year and an 11.3% increase in real incomes in the March quarter of 1989, compared with the bottom 20%, earning less than $17,400 p.a., whose real income increased by 1.6% and 3% respectively (Department of Statistics, 1989).[16] These new tax rates were a compromise, as Roger Douglas had proposed a flat-tax of 24%, but this was publicly repudiated by Lange. The Labour Government pleases the relatively affluent, then, who have work and who are encouraged to consume resources.[17]

## 8.5 Summary.

We are faced, therefore, with a seemingly intractable problem: apparent concern by the Government for the well-being of the population and the environment, but policies which continue to foster a high level of resource use and waste and an economic philosophy which seeks to minimise public intervention and reduce public expenditure.

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15 Prior to October 1988, personal tax rates were: 15% for income of $0-$9,500; 30% for $9,500-$30,000 and 48% for $30,00 and over. Company tax was 48%. Post October 1988, personal tax rates are: 24% for income of $0-$30,875; 33% for $30,875 and over. Company tax was reduced to 28% for the period October 1988-March 1989, but this has since been increased to 33%.

16 The difference between high and low income earners is somewhat overstated as Family Support payments are not fully counted in low income earners figures. High income earners do not receive Family Support.

17 Even interest on savings are to be directly taxed at source from the beginning of October, 1989. On the other hand, the Government has introduced a tax on consumption, the Goods and Service Tax. Although it is a regressive tax (12.5% flat rate on practically all goods and services) there are specially targeted, government funded, financial support measures for the less well-off. Some might argue that this is no more than systems maintenance.

Priorities have been set to deal with the most pressing concern, the economy, without giving due attention to other issues which were bound to be affected. Whilst better economic management was justified, the radical policies adopted by the Government have had a devastating effect. In general, few would disagree that the level of service and delivery of public goods has deteriorated in the last five years. The West Coast has been substantially affected in this way.

We have seen that the way we think about the future and the action we take is very much determined by our attitudes and values. There is no doubt that different development paths could be followed, if there were the will. Numerous scenarios could be discussed to show how life would be different, but these would be hypothetical unless we could convince others that change was necessary and pressing. But, when the consequences of our present lifestyles seem remote, we often do not see the need for change. When continued economic growth seems to some to offer the prospect of improvement for all, the more difficult issue of the inequitable distribution of wealth is masked (Daly, 1973). The road to a steady state economy will be painful and full of conflict (see Ophuls, 1973; 1977; Brown, 1973; Burch and Bormann, 1975; Kim, 1980; Laszlo, *et al*, 1980; Falk, 1983).

Instead of conceptualising this steady state economy for alternative forest-based users, we turn to a more immediate strategy. In the next chapter, we argue that alternative forest-based users are in fact living a lifestyle which should be a model for us all: they are living with less, but at the same time derive a great deal of satisfaction from their activities, the environment and social conditions. To ensure that their basic economic needs are more readily satisfied, action is necessary, however: social forestry offers a way of making their lives more secure.

# CHAPTER 9 SOCIAL FORESTRY.

## 9.1 Introduction.

This study has shown that there is an intricate link between physical, social and economic conditions and the realisation of viable alternative forest-based activities. Concentration on single objectives, such as timber supply or the balancing of the books by the Government, distorts reality. These, often short term, goals negate the long term realisation of multiple-use management objectives and the benefits derived from a more holistic, interrelated view. We have seen that by being preoccupied with managing forests for timber production, bureaucratic decision-makers gave cursory consideration to other possible uses until very recently. And, they did not fully appreciate the needs of alternative forest-based users or their economic predicament .

Alternative forest-based users did not necessarily want to strip the forest of resources, but they wanted a better share of the cake and the opportunity to achieve a reasonable standard of living. If, on occasion, they were inclined to harvest as much of a resource as they could get access to, this was not necessarily because they were greedy or had no concern about future yields. It was also because they had no assurance that they would have future access to the resource.

Bureaucratic decision-makers did not have sufficient regard for the equitable distribution of resources, as they were more concerned with obtaining monetary payments for the use of resources. This was a source of contention and conflict, but something which alternative forest-based users could do little about because they were few in number and had little economic and political strength. Policies affecting forest-based activities were imposed from above, more often than not.

However, government departments have been following policies set by the Government, which has reduced their funding and forced them to raise parts of their budgets by direct user charges. But most alternative forest-based users have not been in a position to pay for services, which they nevertheless needed, and which were formerly funded by the public in general, through taxes. Hence, they were also opposed to increases in bonds and licence fees. With resistance from users to pay increased fees, and cuts in budgets, departments such as DOC find it very difficult to manage effectively and undertake research.

In this chapter we explore the implications of this situation and offer a way in which bureaucratic decision-makers and alternative forest-based users can help each other.

## 9.2 Opportunities without Government Support?

We started with a working hypothesis that there might be alternative, sustainable uses of indigenous forests which could provide employment, income and an acceptable quality of life, without massive amounts of government support. We have found, instead, that there are not many possibilities for extra employment, if these are based on the harvesting of wild plants or animals. Those who are dependent on nature can only take what nature provides: they have little or no control over the quantity or quality of the resource. Feral animal products are in competition with farmed produce, such as deer, goats and mink, which are more productive and of better quality. As a result, the price realised for feral products is below that of farmed produce. Increased supply of farmed stock, changes in tax regimes and international conditions reduced prices, with a flow-on effect to feral activities.

Sphagnum moss is the only wild product which has not been affected by farmed material. But, its future supply is uncertain precisely because it is not farmed. Thus, whilst conditions have been buoyant, with over 130 full-time equivalent jobs in 1987, the sustainability of the resource is questionable and employment could fall rather than rise.

Beekeeping too is affected by lack of management. Inadequate manipulation of hives, plus factors, such as the weather, over which beekeepers had little control, resulted in under-achievement, even though West Coast yields per hive were higher than the national average.

In order to achieve more stable work conditions and the prospect of full-time employment, alternative forest-based users needed, therefore, to move along the spectrum of use and become resource enhancers, rather than primary resource users.

But, we have seen there are many obstacles to achieving the level of management required: possible reluctance by forest-based users themselves to adopt this way of life; their lack of knowledge, expertise and capital and hence access to resources; the usurping of control of resources by externally based organisations; inadequate resource information and research; narrow attitudes by bureaucratic decision-makers and, also, institutional and legal constraints. Finally, international events and policies by overseas governments affect consumer demands, sending market signals to alternative forest-based users, stimulating action or depressing it.

Many of the activities were of marginal financial viability, and even where profitability ratios were good, individuals often could not get access to enough of the resource to make a full-time living. Part of the problem lay in an almost complete lack of concern

by government for an equitable distribution of resources to West Coast users. Small scale, local, moss producers were no match for the large, external-based companies who were tendering for harvesting rights. At the other extreme, open access also has its disadvantages. The lack of concern about the distribution of benefits, evident in the perpetuation of the 'open-block' management system for possums in the frontal country, results in a free-for-all, to the mutual disadvantage of serious possummers, who are discouraged, and of resource managers, who are required to keep feral animals in check.

## 9.3 Administrative Problems.

Thus, even though logging has been substantially curtailed, forestry problems remain and are not going to disappear, despite the restructuring of government departments and the seemingly more straightforward pursuit of single objectives: profit or preservation.

The Coast is an large region, difficult to service because of its length and terrain. The financial resources allocated by government make management difficult: there are insufficient staff to cover the territory and to undertake research. Expenditure on resource inventories for animals and moss is required, because, without adequate information, long term planning becomes impossible. Cost-cutting has left inadequate government advisory services. As the size of territory presently covered by the few remaining government advisory officers is extensive, an in-depth understanding of local issues becomes more difficult to acquire.

In the main, those that are assigned to manage resources are relatively new to their jobs and have not got the local experience or contacts to do justice to their tasks (see Chapter 1). Most of those who transferred from the NZFS and DL&S to DOC on the West Coast had not previously dealt with "special" forest resources. In fact, management has been in a hiatus from the beginning of this research, when government personnel were preoccupied with the future of their jobs. On the establishment of DOC, Timberlands and Landcorp, new personnel had to cope with the turmoil of setting-up the new administrations and then reviewing policies *de novo*. Just as things were settling down, the Government decided to cut DOC's budget, prompting further "restructuring" within the department. The Government also decided to privatise Timberlands and Landcorp. No wonder resource users were discontented with the change of events: there was little continuity, a great deal of uncertainty, a reduced level of service, changes and increases in levies and bonds and the introduction of proposed policies without adequate understanding of the financial position of licensees.

Whilst these events were unfolding, environmental deterioration continued, largely unabated. Commercial pressure on feral deer and goats, that had kept animal numbers

low, began to wane. With a concomitant improvement in habitat, animal numbers are on the increase. Possum damage, too, is severe and increasing in the heads of major river catchments and on a front moving into the southern part of the region.

Time is running out to introduce policies and practical measures to ensure the sustained harvesting of moss, yet resource managers are still running around seeking advice on what to do. Demand for moss continues at a high level, making it likely that an overshoot in demand will result in a crash in supply, to the long term detriment of the Coast.

Meanwhile, DOC is encouraged to promote its estate for recreation and tourism, and South-west New Zealand is in the process of being nominated for World Heritage status, whilst the environment is under continued threat. This puts DOC in an unenviable position.

## 9.4 Attitudinal Change.

When forest management was principally geared to timber production in lowland forests, the protection of water and soil values in upland forests and the preservation of indigenous biota in national parks, alternative commercial uses were not only accorded low priority, but also seemed to have been an irritant to land managers. For instance, licences for sphagnum moss harvesting were issued for short periods and renewed on a month by month basis where land was allocated for afforestation or reforestation (Denne, 1982). Even when moss was regarded as a legitimate use, licences continued to be renewed on a short term basis, discouraging harvesters and processors from managing the resource for sustained-yields. In national parks, the preservation of indigenous flora and fauna takes precedence over everything else, so management for sustained yields of animals is contrary to legislative provisions.

Historically, alternative forest-based uses were to be controlled by resource managers if their activities encroached on values enshrined in protective legislation or if they competed for land earmarked for reforestation (as with moss). A constant battle was fought with deer cullers and airborne shooters, as the scramble for resources reached a peak and confrontations broke out. Possummers were given free rein in the frontal country, but there was no confidence that they could be as effective as government-funded poisoning programmes, such as that in the Copeland valley. Beekeepers, nurserymen and even craft woodworkers were incidental users. Even though there had been a belated study of the latter (Houghton and Caskey, 1985) there has been no strong policy thrust to encourage the growth of this activity.

Resource managers need to have a more positive attitude towards alternative forest-based users. At a time when many members of society are striving for more and more material goods, and higher and higher incomes to buy luxuries, alternative forest-based users opt for a life of "voluntary simplicity" (Falk, 1983) trading-off higher incomes for a certain quality of life, even though they would welcome more secure and steady jobs.

The acceptance of a life with fewer material rewards, but rich social and environmental benefits is a way of life endorsed by the ecological school, to counter materialism and provide hope for society. Whilst it is naive to think that a transition to a more sustainable future could be as simple as this, it is salutary to remember that major changes have resulted from small beginnings. Instead, then, of dismissing alternative forest-based users as the lunatic fringe, we could better regard them as part of a growing social movement and help them improve their economic conditions. Resource managers could be more aware of the fact that, in the long run, alternative forest-based users depend on the sustainability of the forest and its resources: precisely the conditions that resource managers should be striving for too.

## 9.5 The Role of Alternative Forest-based Users.

Alternative forest-based users have a vested interest in maintaining and enhancing the forest cover as their livelihoods depend on it. Also, in effect, they undertake activities that all foresters should be concerned with. They help keep browsing animals under control, which protects both the forest itself and down-stream water and soil values, as well as being of use to other commercial interests, such as dairy farmers, and to those who appreciate the forest for aesthetic, recreational, spiritual and cultural reasons. They add value to the timber resource itself, using off-cuts that would otherwise be wasted to produce charcoal. They hone high value craft products, efficiently making use of timber, creating intrinsically satisfying and often functionally useful items too: imparting an appreciation of wood as one of the most versatile products known to man, to be used with sensitivity and care. Beekeepers are interested in ensuring a healthy forest environment so that they can continue to harvest rata and kamahi honey and are concerned about indiscriminate timber harvesting. Horticulturalists would find life difficult without them, as would dairy farmers whose clover pastures require pollination. And if the forest just seems to be a green, uninviting world, who better to interpret it than the local guides? The news that the West Coast is a jewel worth seeing and experiencing spreads by word of mouth: by contact with those who have a deep personal commitment to environmentalism.

All these contributions and more can be ascribed to those who have some dependence on the sustained-use of the forest. This is in stark contrast to those who regard the forests

as just a source of cheap feed-stock for the local mill. Alternative forest-based users share a common interest with resource managers in DOC, though the legacy of past management for timber production has clouded perceptions: DOC's mandate has been distorted by those opposed to change to mean that resources are now unavailable: "locked-up".

However, the lack of information about the future availability of and access to resources compounds the insecurity of alternative forest-based users . This leads them to act intuitively, rather than on the basis of scientific rationality. It is hardly surprising that they sometimes exploit resources, in a pejorative sense: who would do otherwise when tomorrow appears financially bleak and/or when the control of forests is usurped by powerful interest groups? It is a competitive scramble to come out on top: so who can blame forest-based users if they sometimes take all they can get?

Small in number, with operations that are insignificant in a regional, national and international context, they have been largely ignored and undervalued by politicians, bureaucratic decision-makers and environmentalists, and exploited and manipulated by commodity traders and overseas buyers.

These factors contribute to the marginal economic viability of their activities. Generally, they cannot either produce enough, or get access to sufficient resources, to make a full-time living from many of the forest-based activities. And when there is a potential to produce more, as in beekeeping, they may still be thwarted by lack of personal management skills. Frequently, moreover, they are in a trap: one of the reasons why they may not be able to make sufficient income from a single alternative forest-based activity is because they hold down a number of jobs, which in turn are an economic necessity. The cause becomes the effect, and *vice versa*.

Nevertheless, the quality of life derived from present activities and the social and physical environment is evidently high, so that if ways can be found to ensure the continuance of these activities, so much the better. However, a move to greater management of resources and away from the relatively unstructured way of life followed by hunters and gatherers would bring greater economic security, as more control could be exercised over the quantity and quality of produce. This need not lead to a major sacrifice in lifestyle, as many respondents were already (pastoral) farmers. (Twenty two cited farming as their main occupation and a further 11 derived a minor part of their income from farm ownership/partnership). Such a move, though, would pose problems for resource managers who would still have a task of keeping feral animals in check. Thus, those who cannot or choose not to become resource enhancers need encouragement and support by bureaucratic decision-makers to continue their activities.

## 9.6 Co-operation and Mutual Benefits through Social Forestry.

For a region which is vast in area but sparsely populated and vulnerable to exploitation by national and multinational resource developers and market traders, it is incongruous that individual alternative forest-based users are, for the most, part acting individually and against each other. They are their own worst enemies and can easily be manipulated and outmanoeuvred by large externall-based concerns

This is nothing new. Historically, the control of timber harvesting has shifted from small concerns to large conglomerates based outside the West Coast. When conditions became economically marginal, these millers merely reduced work loads and closed their mills. Directly and indirectly they were aided and abetted by governments of the day. As Fife (1971) noted, everyone does not necessarily suffer from a ruination of the commons: some cream off the profits and move on, leaving a debased and degraded environment to someone else.

But now a new strategy is necessary, as the future of almost 90% of West Coast indigenous forests and lands administered by DOC depends on maintaining the forest cover and sustaining resources. Those who are motivated by self interest and short term profit maximisation do not fit easily into this new scheme of things. South-west New Zealand is now recognised as part of the nation's natural heritage and it is in the process of being nominated for World Heritage status, giving it international recognition. This, and heightened environmental awareness, will make it very difficult for resource managers to find excuses for failing to manage sensitively. Yet, there are still contradictions in resource policies. Management leaves a lot to be desired. Whilst there are procrastinations and delays over who should pay for research, resources such as moss become vulnerable to mis-use.

It is apparent that alternative forest-based users and bureaucratic resource managers need each other. Mutual benefits could flow from more co-operation among and between them. There have to be positive incentives for this to occur, though. Attempting to squeeze user charges from those least able to pay does not help: what helps, is demonstrated concern about the equitable distribution of resources and access to them.

One process which fosters co-operation amongst those most in need, and seeks to improve their welfare, is social forestry. This is not a concept just applicable to the Third World or narrowly restricted to co-operative enterprises growing fuelwood.

To recap, social forestry is a management approach which closely involves local people in forestry and related activities, for which people assume responsibility and from which they derive a direct benefit through their own effort (Pardo (1985). Thus, it fosters self-

reliance. For our purposes, social forestry embraces community forestry and thus extends from individuals co-operating with one another for a common end, at one end of the scale, to formal co-operative organisation and action at the other end of the scale. As conventional, large-scale industrial forestry and activities that contribute to communities solely through employment and wages are excluded, the concept has particular relevance for alternative forest-based activities on the West Coast. It is "forestry with a human face", concerned with meeting the problems, needs and aspirations of those living in, or near the forest: forestry for local, rural development (Rao, 1983). The focus on people and forestry development at a grass-roots level, rather than on industry and regional or national economic benefits, such as export earnings, makes social forestry an approach strategically different to conventional forestry.

For social forestry to be successful, co-operation rather than confrontation between resource managers and forest-based users is essential. The necessity for this on the West Coast is obvious. Co-operation can be achieved more easily when there are mutual benefits. Resource managers must give something in return for the help of forest-based users. A start was made when the Sphagnum Moss Association was established, with the assistance of the NZFS. The understanding of local members was that they would get favourable consideration in the allocation of moss. This did not materialise, and, as the members could not agree amongst themselves on a future strategy, the Association went into recess. It became a waste of time.

The use of possummers in the Deception valley of Arthur's Pass National Park by DOC is an example of positive co-operation. Each side benefited from a highly successful venture. There was no free-for-all scramble for possums, but a specific allocation of territory to four possummers. These possummers were able to make a fair financial return for their efforts and so remain in business when economic conditions were otherwise adverse. The indirect spin-offs for the local community were support for commercial services and the maintenance of community networks. These went unmentioned and uncalculated. The simple act of giving local possummers a specific role in animal control helped keep people in work: it helped maintain the cohesion and existence of marginal rural communities. And in return, possummers saved public expenditure on poisoning operations and earned foreign exchange, on which New Zealand depends to pay for imports.

There are other tasks, also, that alternative forest-based users could perform, that would be of benefit to resource mangers. We have already mentioned both the first hand knowledge that users have of the forest and their lack of management skills. Forest-based users could help resource managers build up an inventory of animal numbers and

their movements and they have an intuitive understanding of how long it takes for moss to regenerate in different localities, because of previous harvesting activities. This information could be collated by resource managers to see if any patterns emerge, so as to focus further research. It is also likely that, collectively, moss harvesters are aware of the location of most areas of moss. After all, they are scouring the country for potential areas to harvest, often over-flying the region as part of recovery operations. This information would be invaluable to managers, who have little idea of the potential of this resource. The present adversary situation discourages harvesters to part with this information: with the onus on the user to identify moss resources, but no guarantee that the finder has first option on its commercial utilisation, some harvesters have expressed a reluctance to help DOC. As resource managers have a principal function to control, licence and enforce unpopular policies, alternative forest-based users have little respect for them.

In Third World countries where social forestry has been a success, the issue of access to resources has been resolved by the promotion of local control. Equity, rather than efficiency and profit maximisation has been the key. Such redress would be anathema to those who presently promote the market as being the most efficient allocator of resources: the most powerful, moneyed groups (external commodity traders) invariably win. But in the end the victory is likely to be pyrrhic, as the 'dispossessed' resort to undercover tactics: they steal, 'beg' and 'borrow'. With inadequate personnel and territory too large to patrol, there is no way that West Coast resource managers can stop this illegal harvesting: it could, though, be reduced with some co-operation from users.

## 9.7 Communal Organisation.

The term 'community forestry' was reserved (in Chapter 2) for a particular facet of social forestry: an activity which involves communal organisation by local people from which they derive direct rewards by their own efforts. We noted that this need not be limited to the growing of trees. If we have a broad definition of forestry, there is no reason we cannot extend the term to cover activities undertaken by certain alternative forest-based users. The communal approach by craft woodworkers can be regarded as community forestry. Although they appeared to Houghton and Caskey (1985) to be an extremely independent group of people, many of them saw the benefit of selling and marketing their products as a group.

There are other possibilities too. Beekeepers have an informal social network already forged by membership of the West Coast Branch of the National Beekeepers Association. They exchange information and some extract honey for others. They meet regularly, and are aware of the marketing problems associated with kamahi honey, but

have no group strategy as yet, as most are relatively small part-timers and sell their bulk honey mostly through co-operatives located in Canterbury. The largest beekeeper is an exception, as he has market outlets in local supermarkets. He would probably not be interested in local co-operative efforts, as he is already well established. There are a number of other beekeepers, though, who might be interested. They comprise younger beekeepers who operate between the Grey river and Ross. As they live relatively close to each other, it would be possible for them to benefit from joint processing, packaging and marketing efforts. Mention has already been made of cross linkages with craftspeople and joint marketing efforts through the craft co-operatives. These are relatively conveniently located for most beekeepers, at Hokitika and Punakaiki. Those in Karamea are isolated, but could perhaps form their own processing group and link into a wider marketing co-operative based in the area from the Grey valley to Hokitika.

Local, West Coast moss producers could also benefit from co-operative action. They could, in theory, join forces to bid for moss when it is put up for tender; if they continue to act independently, though, they will continue to be out-bid by non-Coast producers and commodity traders, with a further loss of control over decisions affecting West Coast residents. However, as noted in Chapter 5, there is considerable secrecy and mistrust amongst local harvesters, making co-operative efforts difficult. A facilitator with a strong West Coast public interest, might be able to bring the parties together.

Communal efforts are unlikely to be of interest to animal-based users. Possumming is an individualistic activity and there is no apparent benefit of forming a co-operative, except perhaps in a loose association, as happened in the Deception valley. There is little that local deer trappers and goat catchers could do to promote the feral product in competition with farmed animals and there is no need to be formally organised as a community to obtain a licence to trap.

There is more 'foreign' competition in safari hunting and commercial venison shooting. If this industry is restructured, with the country divided into a small number of commercial blocks, it would be in West Coaster's interest to form a co-operative venture. As in the moss industry, locals would be more easily able to compete for the resource. But, as yet, there is no evidence to hand to suggest that locals would be inclined to do this.

The benefits and drawbacks of communal organisation would have to be discussed with the respective user groups to see what the response would be, even though from our perspective the option appears to have promise. However, there are precedents on the West Coast. Apart from the craft co-ops, whose membership included a socially different group of people to other alternative forest-based users, dairy farmers have a

long co-operative tradition on the Coast and in the rest of New Zealand. Although independently producing milk from privately owned farms, they have formed co-operative processing and marketing organisations throughout the country. Hence, community forestry may not be too strange a concept or mode of operation, even though it is still at a nascent stage of development on the Coast.

## 9.8 Facilitating Social Forestry.

### 9.8.1 Perceptions of Forestry: Educational Reform.

Our attitude to lowland indigenous forest is changing: we were on the brink of destroying them, but are now finally beginning to appreciate them for their wider values. But to bring forth their full potential, we need a range of skills different to those of the industrial forester (Burch, 1988): skills focused on the interrelationship between people, the natural environment and the political economy.

As noted above, these skills are in short supply in the bureaucracy on the West Coast. Many of those employed in DOC are foresters (or have other natural science qualifications) but we noted in Chapter 2 the inadequacy of forestry education in New Zealand (and overseas). At the School of Forestry, University of Canterbury, the social aspects of forestry have been tacked-on to a predominantly biophysical and technocratic course structure that is heavily biased to production forestry; multiple-use forestry is an optional subject in the final year of the undergraduate degree. A reviewed curriculum will come into effect in 1990, and moves are being made to teach the social significance of forests as a first year, intermediate subject available to all students at the university. The philosophical basis for preserving forests and establishing and tending plantations will be taught, as will the fundamental ecological role of forestry and its necessity for the survival of people on this planet.

However, the role of the social sciences in dealing with the processes rather than the product (trees) awaits further development. There is still a need to foster skills which deal with human-environment relationships, though this might eventuate if promised

links with a resource management degree at Lincoln College eventuate.[1] A conservation management stream to the Bachelor of Forestry Science degree is also proposed for 1991, to provide students with a solid grounding in natural science, introduce management principles and, also, integrate the two. Human ecological concepts and the interrelationship of people, the environment and their political economy are not an explicit part of this course, though much remains to be done to flesh out the content of lectures. A strong argument can be made for the latter to be core subjects in both of the proposed forestry streams in the School ("production" and "conservation management")[2] rather than grouped as "liberal studies" around a conventional bio-physical core, as envisaged by Richardson (1988). As social sciences are not compulsory first year prerequisites for entry into the Forestry School, and physical sciences are, the bias to the latter will inevitably continue.

Those who are presently employed as resource managers will not benefit from these changes, but the next generation of foresters will receive a broader education. However, there seems no reason why extension courses and mid-career programmes in social-environmental sciences could not be run to update resource managers on subjects such as socio-economic surveys, market research and marketing, project evaluation, non-market valuation, mediation and problem-solving.

### 9.8.2 National Policy.

Universities and other places of higher learning are just formal institutions where perceptions and attitudes can be broadened. The process has to be community wide. It has to start in the home, with habits and attitudes which reinforce an environmental ethic. Ultimately, though, the attitudes of decision-makers are crucial.

As we noted in Chapters 2, governments have to be philosophically inclined to support social forestry initiatives and take active steps to nurture them. In Chapter 8, however, it was pointed out that the Government and Opposition were generally opposed to intervening in the economy and that although they profess to be concerned about the environment, they tend to divorce this from economic and social issues. We have shown that they should not be treated separately. The recognition of this fact is a prerequisite to providing a management framework for alternative forest-based users.

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1 Lincoln is an agricultural college of the University of Canterbury. Closer co-operation with resource management and parks and reserves courses will begin to take effect in 1990 when the College becomes a university in its own right.

2 The titles "production" and "conservation" perpetuate the misnomers noted in this thesis. The "production" forestry stream will in fact concentrate on industrial forestry. Using the term "conservation" for the other stream could give the impression that wise use and management is not part of industrial forestry too.

Given that there are budgetary constraints and that the major resource management agencies cannot adequately deal with the situation on the West Coast, there is some hope that the potential role of alternative forest-based users will be recognised. This is fundamental.

This recognition has to be accompanied by policies which support local initiatives and institutions in preference to non-residents, i.e. initiatives which give local users fairer access than at present to resources and involves them more actively in the formulation of management policies that directly affect them. Livelihoods are at stake: thus there has to be a commitment by Government to the sustained-use of resources.

We have seen that the allocation of scarce resources is a political process, raising questions about access to them, and the distribution of benefits, and that foresters were naive in believing that rational arguments would suffice. In fact, foresters have not tended to be at the forefront of the main issues affecting the use of forests: environmentalists raised public consciousness and successful influenced the Government to curtail indigenous logging. And now, all but a few foresters are mute over the impending sale of State production forests (except Thomson and McKelvey, *The Press*, Christchurch, 2/2/1988; Thomson, 1989b; Allen and Walker, 1989; Poole, 1989b). The question of equity and the distribution of harvesting and processing benefits and costs should be major topics of debate by the New Zealand Institute of Forestry and the community.

The public can ask what criteria the Government intends to follow if Timberlands' and Landcorp's assets are privatised. Will there be conditions attached to a sale, or will the Government try to insist that these would hamper a sale and prevent a maximum price being realised, as it has done with the plantation resource? For the long term future of development on the Coast, profit maximisation should take second place to sustained-use. But how will this be ensured, given the inadequate knowledge about the growth and yield of this resource? Will preferential consideration be given to local, West Coast bidders if the resource is put up for sale and how will this affect Timberlands' joint venture with Colyer Watson? The details of this arrangement are a commercial secret. The public can demand that an open system of assets disposal be followed. This would be more readily ensured if the resource was put up for sale in small blocks rather than in one parcel, as local harvesters and producers could form a consortium or co-operative to make competitive bids: the greater the value of the resource, the more difficult it would be to raise local capital. If these forests are sold, then, physical access could become an issue of greater significance than at present. Access to resources needs to be maintained, if beekeepers, for instance, are to be able to continue using forest sites or

establish new sites in indigenous forests. Already, with the demise of the NZFS and the cessation of logging in some forests, roads have been closed. This applies, not just to forested land, but to areas adjacent to forests, as access across such land can effectively deny public access to the forest itself, unless helicopters are used.

If the Government is sincere, it should back its rhetoric with consistent policies. This means, for instance, that covenants should be attached to the sale of State indigenous resources to require their eventual return to the public in as good, or better condition than they were before the sale.

Most indigenous forests on the West Coast will not be privatised as they are administered by DOC. Sustained-use of resources is now legally required under the Conservation Act, 1986, though the provisions are not clearly stated. DOC has a mandate to manage conservation areas, which amongst other things, is any land or foreshore that is "land in respect of which an interest is held....for conservation purposes". Thus, conservation areas cover forests which DOC administers. In the Act, conservation:

> *a) in relation too natural and historic resources generally, means the management of those resources so as -*
>
> > *i) To sustain their potential to meet the likely needs and desires of future generations; and*
> >
> > *ii) Subject to the sustaining of that potential, to meet the needs and desires of present generations; and*
>
> *b) In relation to any particular natural or historic resource, means the management of the resource in a manner that is the most appropriate contribution to the conservation of natural and historic resources generally* (section 2, Conservation Act, 1986).

This definition is somewhat loose. What is management "in the manner that is the most appropriate contribution to the conservation of natural and historic resources generally"? This could be a convenient escape clause for resource-managers to prevaricate and make excuses for failing to manage for future generations. The Government should be unequivocal and introduce tighter sustained-yield provisions. It follows that a commitment to the sustainability of resources requires government-funded resource surveys and on-going management programmes. Most obvious is the need for more understanding about the physical environment. This knowledge is not only necessary to determine minimal levels of animal browsing that can be tolerated in different catchments, but also to determine the potential of forest-based commercial activities.

Anomalies in legislation need to be removed. Whilst eradication of introduced animals in some areas, such as national parks, is required by law, it can only be achieved with

certain species in specific localities. Environmentalists are opposed to changes in the National Parks Act, even though Salmon (1989) recognises that eradication is an ideal, as noted in Chapter 8. But by persisting with this ideal, bureaucratic decision-makers and environmentalists have adopted a closed mind to game management. In the meantime game animals and possums are increasing in numbers. Without some sustained pressure on animals, which is not provided at present by commercial hunting and trapping, there will be an eruption in feral animal numbers. Safari hunting is one of the few potentially lucrative options left to help ensure the better management of deer. A prerequisite would be up-to-date resource information, which the activity could help fund.[3]

The inconsistencies in the Conservation Act also need to be tackled by the legislature. Again, environmentalists would be opposed to this. The overriding protective thrust of the legislation (rather than the mis-applied preservationist one) can be retained, but more clearly defined. Now that timber harvesting has been excluded from most of the State's indigenous forests, a *de jure* recognition of multiple-use principles would only follow the *de facto* reality of day-to-day resource management. Despite the problems in determining what an optimum use is and the political nature of allocative decisions, it appears that formal legislative procedures in the US have sharpened up techniques, interest, advocacy and public participation in planning for a wider range of resource uses (Thomas, 1987). The merits of including a legal requirement to manage for multiple-use should be given careful consideration in New Zealand, rather than being rejected out of hand because of its earlier association with timber production and the consequent downgrading of other uses, until comparatively recently.

The Government has promised to introduce national resource management strategies to guide regional resource management policy statements to be prepared by the new regional councils (see Chapter 8). There is an urgent need to set similar national priorities to guide the management of State indigenous forests.[4] As there are many areas

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3 At present a Conservation Law Reform Bill is in its second reading before a select committee in Parliament. It significantly affects the law relating to conservation quangos, freshwater fish and game-bird management and conservation management planning, but omits the management of deer and goats. The latter awaits serious attention.

4 The Minister of Forests has stated that there is a need for new forestry legislation with an overriding forest philosophy and that forest estates should be managed of in the long term national interest (*The Press*, Christchurch, 3/12/1988). A policy on the management and protection of native forests on public and private land would be developed (*The Press*, Christchurch, 24/6/1989). As a result of a trip to Europe in 1989, the Minister was subsequently reported to be in favour of multiple-use and sustained-yield management and government involvement in forest ownership and production (*The Press*, Christchurch, 29/6/1989). However, he evidently had little support in Cabinet, as it was subsequently announced that cutting rights in plantations would go on sale in September 1989 and that it was unlikely that buyers would be forced to replant "as this would be interfering in commercial decisions" (*The Press*, Christchurch, 13/8/1989). The Government evidently wishes to obtain the maximum price possible for its forests: requirements to ensure that land is replanted or restored once

of management competing for attention and funding, there should be an open debate about the damage to forests by browsing animals and the effects of unsustained harvesting of resources. Unless these issues become known and the reason for proposed action explained and debated, it will be very difficult to change budgetary allocations

Incentives may have to be given to support activities which, though not economically viable, are of wide social importance and are essential to the health of the forest. For instance, if DOC adopted a closed rather than 'open-block' system in the frontal hill country, then serious possummers would be more assured of a reasonable harvest. This would help them remain economically viable and ensure the continuity of control operations, rather than the present system which encourages casual operators who only spoil the market and discourage full-timers. Monitoring would ensure that the block could be re-allocated if the possummer was not doing an adequate job. However, if the market price of skins was not sufficient to encourage trapping, then, in addition, a monetary bonus could be considered, as was done in the Deception valley exercise.

To further promote animal-based activities and to provide for more secure incomes, an analysis of the impact of user charges is necessary, as a prelude to reviewing licence fees and levies. These should be set at a level which will not discourage activities which help control feral animal numbers. At the moment, market conditions are such that levies and rentals are a burden. But, as economic conditions change, with the rise and fall of market prices, financial returns to hunters and gatherers need to be monitored, in order to determine their future ability to pay and also to determine when it would be appropriate to institute bonuses to encourage harvesting. On the other hand, a research levy on the harvest of moss from public land can be justified now. The revenue should not go into a consolidated fund, but be used solely for research.

As most feral-based activities offer limited and uncertain long-term economic prospects, better financial and managerial services can be justified to enable hunters and gatherers to become resource enhancers, should they so desire. At present, government assistance to small businesses is limited. The Department of Internal Affairs administers a scheme to help groups of unemployed people set up co-operatives: the Small Co-operative Enterprises Scheme (SCOPE). Under this scheme, advice can be provided on planning, finance, project evaluation and marketing and a very limited amount of

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trees have been cut would likely bring lower priced bids for the resource. The lack of requirements to replant or restore the land has been criticised by the Parliamentary Commissioner for the Environment (*The Press*, Christchurch, 22/7/1989). (The Parliamentary Commissioner is an independent assessor of the performance of agencies involved in environmental planning and management. She is an officer of Parliament, independent of the Executive).

seeding finance is available, provided that normal sources of funding have been tried first (Department of Internal Affairs, n.d.). There is some flexibility in funding: those applying need not necessarily be unemployed, but the project must otherwise be of community benefit (Bryant, 1989). Nevertheless, SCOPE is mainly an advisory service. The Development Finance Corporation, the New Zealand Government's 'development bank' used to run a small business agency for small business operators, until it was privatised. The local responsibility for this service has now been transferred to the Canterbury Resource Centre, now renamed the Small Business Agency. It holds courses on running small enterprises and has a network of advisers. These are run on a 'user-pays' basis, although a welfare subsidy is available for six months, but only if participants are registered as unemployed.

SCOPE and the Small Business Agency are therefore helpful only in a limited way to those who are not actually unemployed, but nevertheless struggling to make a living. Beekeepers need not only business advice, but market research to determine the potential of promoting their particular types of honey. This will require some funding, which most beekeepers cannot afford individually, but which, perhaps, they could fund collectively. There is a possibility of obtaining part funding of the total cost of research from the West Coast Regional Development Council, which recommends projects for assistance by the Ministry of Commerce (formerly the Trade and Industry Department). Two schemes exist at present. The Regional Development Investigation Grant Scheme is "designed to help stimulate innovative, economically viable and self sustaining developments new to a region" (or extend existing developments into new areas) "based on their identified resources and development opportunities" for which 50% funding is available (Department of Trade and Industry, 1988). The Community Employment Investigation Scheme has similar objectives and is directed towards regions which are losing a large number of jobs and have a high level of non-seasonal unemployment. Ninety percent funding is available under this scheme (Department of Trade and Industry, n.d.). But there are limited funds available and reimbursement of expenses follows some months after they are incurred, so the proposer must be sufficiently solvent to carry these expenses for a period. These schemes, nevertheless, offer some possibilities to beekeepers. Instead of limiting support for the establishment of small businesses mainly to those who are unemployed, it would be better to have the support means-tested, so that those with low incomes would automatically qualify. The absolute level of funding also needs to be increased, because support for emerging industries should be regarded as an investment that can pay dividends: not merely as a debit on the coffers of government.

9.8.3 Regional Action.

Although a national framework is essential, immediate regional action is desirable, as changes to policies and national programmes take time to evolve and to be put into place.

The Department of Conservation's West Coast budget is tight, but nevertheless, consideration could be given to re-directing the activities of those involved in the licensing of alternative forest-based activities. Instead of these people having a primary control function, their role could be broadened to that of extension officers. Such officers used to exist in the NZFS, though they had a relatively narrow function of advising the public on the establishment of woodlots and shelterbelts and on silvicultural practices. They also advised woodworkers on the different qualities of wood and took an active interest in promoting better timber drying, treatment and utilisation techniques. This information is still indispensable to alternative forest-based users.

Although DOC is not in the business of promoting plantation forestry, enrichment planting with native species is still important. Furthermore, there is still a place for introduced species on land that is not in national parks and reserves. The promotion of these species would not be for timber production. For instance, they could provide sources of forage, for the benefit of beekeepers, who report a dearth of pollen, in the autumn, in and adjacent to beech forests.

Extension officers should, though, fill a broader role than this. They should be thought of as the facilitators of change at a grass roots level. It is they who should have an understanding of the social and economic viability of community-based resource activities and user needs. Ideally, they would provide the business and advisory services similar to those provided by other government agencies, such as the Department of Internal Affairs.

Extension officers would provide leadership. There is a degree of fatalism amongst some alternative forest-based users which has to be overcome if action is to be taken. A catalyst or facilitator can generate ideas and offer encouragement.

Another way of fostering co-operation, awareness of others needs and two-way communications would be for DOC to establish an advisory committee of representatives of commercial groups (including alternative forest-based users), non-commercial users and resource managers. The committee's function would be to formulate policy. One major advantage would be that 'user-pays' and other policies could be discussed and agreed on prior to their adoption, instead of being imposed from

above. Similar committees could be established by Timberlands and Landcorp, until they are privatised.

The establishment of advisory groups need not be made formal, but nevertheless, they need to have some influence. If their advice is ignored, participation will dwindle. It may be necessary to keep these groups unofficial or to find an agency to work through, if DOC has too negative an image. The West Coast Regional Council (to supersede the WCUC) as the other major agency concerned with 'conservation and development', could play an intermediary role.

Greater participation, by alternative forest-based users, could also be fostered by reducing the powers of the Director-General of Conservation and Minister of Conservation in determining the outcome of submissions on management plans, which have to be prepared for every conservation area. Unlike the situation under the Town and Country Planning Act, 1977, there is no independent judicial tribunal to hear disputes over the use of land. The Minister of Conservation has the final say on the approval of management plans, on the advice of the Director-General. Although the Minister could still have the final say, an independent tribunal would be seen to be impartial.

This is not to say that there has been no dialogue or involvement with alternative forest-based users, just that more could be done to improve relations. DOC has made a successful start with possummers in the Deception valley. It should give greater publicity to this and similar projects it has been successfully involved in locally. Such positive action may combat the negative impression that DOC's role is to 'lock-up' resources.

### 9.8.4 Community Action.

The test of the above suggestions will be the reaction of local people. The time for hypothesising is past: now is the time for action. Instead of wondering what alternative forest-based users would do, the above suggestions should be put to them directly. They have to be encouraged to try new forms of social organisation and convinced of the benefits of working along side resource managers, as well as being helped to improve the management of their forest-based operations, where appropriate. One such opportunity will soon be available.

A 'wild foods festival' is to be held in March 1990 to coincide with the opening of the Hokitika historic wharf restoration project (Bryant, 1989). Consumer acceptance tests could be undertaken to determine the reaction to different flavoured honeys, to other

beehive products and to packaging and presentation. Commitment to such a trial is dependent on group effort, as it would require some expense and organisation, during what is a very busy time of the year for beekeepers.

Direct community action is also possible. Eighty people were reported to have attended the meeting in Karamea to discuss ways in which the community could help nurture local enterprises. A similar concern in Kaikoura (in Marlborough ) resulted in the creation of eight jobs in the tourism industry. The concept of locally owned community enterprises is being examined by the Department of Internal Affairs and ways are being explored to provide a legal basis for a community to become shareholders in limited liability companies (McNab, 1989). A greenstone factory owned by a number of community-minded Maori in Hokitika is a similar example of an attempt to provide local employment (Tainui, 1989).

## 9.9 Opposition to Change.

Having a thorough understanding of local aspirations should not pose problems for bureaucratic decision-makers as this should be part of their normal duties anyway. However, providing for their needs in preference to non-Coast operators could be opposed by the latter on the grounds that it discriminates against them.

Affirmative action is not likely to be an issue in deer trapping, goat catching and possumming as these activities are mainly undertaken by local residents. Preference has already been given to local possummers in the Deception valley. A 'closed block' system for possum trapping in the frontal ranges does raise equity questions, but this should be weighed against the present free-for-all system, which reduces the economic viability of full-time operations. Uncontrolled harvesting also increases the chances that poorly presented skins will be produced by people who only have a casual interest in the activity.

Game hunting is undertaken by non-Coast operators, some of whom operate out of Otago. At present this activity is at a low ebb, but re-organisation of the industry, as outlined by Challies (1989) in Chapter 8, would be inequitable. A wider consideration of this matter is necessary, to take account of the role of the recreational hunter and deer trappers. Deer trapping and goat catching are not monopolised by large companies, so there should be no problem providing for those who want to continue these activities. Given the low financial returns obtained at present, every encouragement should be given to those who choose to continue, and obstacles and disincentives, such as the the high bonds to cover the non-removal of traps, should be reviewed.

Giving greater resource access opportunities is not an issue amongst nurserymen and woodworkers, though it is important that sufficient heart timber is made available to woodworkers. At present, those craft woodworkers who have the most stringent requirements often select the butt log with the help of a chain-saw miller as difficulties have been experienced in obtaining suitable timber from conventional sawmills. Options should be left open to enable personal selection of timber, but how this matter will be handled remains uncertain, as details of the proposed sale of the State's indigenous forests have not been released by the Government.

The control of moss harvesting and processing by non-Coasters poses equity problems. But, as we have seen, non-Coast control has not brought co-operative research efforts or agreed marketing strategies. Companies have acted in their own narrow interests: moss is just another resource to invest in and make money out of.

However, positive discrimination in favour of those who have a personal, long term stake in the Coast can be justified as the benefits of their participation return to the local community. To ignore or shut-out local people also invites trouble, as it encourages uncontrolled harvesting. Affirmative action would not detract from the regional, national and international significance of West Coast indigenous forests: it would help enhance it.

There will always be local opposition to change. This should be respected. There will be some alternative forest-based users who would prefer to continue their unstructured ways of life, as free as possible from bureaucratic controls and the quest for greater financial rewards. For some, this is the beauty of their chosen occupations.

## 9.10 Further Considerations.

Market research and marketing is another area of need. Producers are especially vulnerable because of the narrow market base for their products. Greater cross-marketing and linkages are necessary, building on the uniqueness of local products. Local, rather than distant overseas markets should also be explored. Lessons could be learnt from areas in a similar situation to the West Coast, such Tasmania, mentioned above in Chapter 8. The conditions in Tasmania could be researched to determine the factors which have led to the success of these industries and whether there are any lessons for the West Coast.

Further economic benefits that might be derived from New Zealand native plants have been published by the Department of Scientific and Industrial Research (Brooker, *et al*, 1988). This emphasises the importance of our indigenous flora as a source of future economic products and as a gene pool. The reason that little is known about these plants

is not because they have no beneficial properties, but because much of the knowledge has been lost. Modern cultivars and products, such as synthetic medicines, have replaced traditional practices and natural products, that were of wild stock base.

Unfortunately, the world has become more and more dependent on fewer and fewer species of plants. For instance, 90% of the world's food is produced from less than 20 species (Brooker, *et al*, 1988). This is a very vulnerable situation, particularly as, in many parts of the world, the gene pool is being reduced by forest clearance and the commercial monopolisation of cultivars. Hence, world-wide interest is now focussed on the exploitation of plants and attempts to enhance the gene pool. The West Coast is in the unique position of having large areas of indigenous forest still intact. Though it is difficult to foretell their future value , the potential to find out still exists.

## 9.11 Conclusion.

International and inter-regional trade makes the West Coast very vulnerable, as it is a weak peripheral region and alternative forest-based users are easily manipulated. Whilst some local action can be taken to improve management and reduce financial risks, the fact is that most of the alternative forest-based activities studied are geared to the production of goods or services for a relatively affluent market. The local West Coast market is small and since this is relatively easily satisfied, the production of high value/ low weight items is generally regarded as desirable to withstand transportation costs out of the region. Thus, most forest-based users are inextricably caught up in the inequalities of trade and the market system, which, we observed, works against the long term sustainability of resources.

More local scale self-reliance could reduce this dependence and the uncertainty of being too closely linked to a highly volatile and fragile world economic system (Galtung, 1982) but only, it seems, if the local market is big enough and if foreign competition is restricted. Even when local produce is not necessarily exported, as with rata/kamahi honey, the world price of other types of honey affects New Zealand clover honey exports, which in turn depresses prices for the lesser preferred mixed floral varieties. In effect, the West Coast cannot escape this trans-global phenomenon, unless New Zealand adopts a siege mentality. This is highly unlikely, except in times of dire emergency and could only be achieved with considerable social and economic disruption.

Nevertheless, social forestry has a role to play as it focuses on non-industrial forestry activities and puts people and their needs first, as well as fostering the conservation of resources and the physical environment. Communal organisation, to redress some of the inequities of non-Coast control of resources and to place users on a stronger

marketing footing, already has a precedent on the Coast. It deserves careful consideration by resource users.

As a focus of attention and mode of operation, social forestry is most relevant to the poor. But poverty is relative, and so it is a matter of judgement in deciding who should be the beneficiaries of social forestry programmes. Clearly, industrial forestry is excluded, yet small scale enterprises could develop into large profitable concerns, which would not warrant specific, targeted assistance. Social forestry is most relevant when it draws attention to those most in need, but it is not the panacea for all the West Coast's ills. There are no magic development solutions. Social forestry cannot redress the inequities of world trade and the manipulation of markets and individuals by powerful groups, but it offers a strategy for the most vulnerable members of society to take local action. Multiple-use and sustained-yield management of resources are a prerequisite. Other government measures, such as investment, trade and monetary policy are still necessary to deal with issues which impinge on all members of society, in one way or another.

Social forestry does, however, offer an organisational framework that is going to become more relevant in the years to come because of increasing demands being put on scarcer and scarcer resources. Our economic and social system is under threat by an exponential consumption of resources to satisfy material, non-essential needs. Yet, despite growing affluence in the First World, there are pockets of relative poverty, such as on the West Coast, and levels of absolute deprivation in the Third World. There are limited government resources to deal with these issues, but a re-orientation of priorities could help alleviate them. Social forestry offers a way for local resource managers and alternative forest-based users to co-operate amongst themselves and between each other. Now that long established forms of assistance, formerly available at minimal charge, have been abolished or severely reduced, co-operation in this way is more essential than ever before.

When land managers and alternative forest-based users can be seen as potential allies, rather than adversaries and when active steps are taken to show their mutual inter-dependence, the air could be cleared for constructive dialogue and eventual mutual benefit. Without such an approach, the unproductive division between 'them' and 'us' will continue.

A fundamental change of attitudes is necessary to bring about a more equitable distribution of resources and care for the planet. There are vested interests opposed to this. But, though we cannot change the situation immediately or completely, we can, individually and collectively, adopt and actively pursue the lifestyle we believe is

necessary for the long term future of society. From this perspective, we can learn a great deal from alternative forest-based users, who have opted for fewer material rewards in exchange for a high level of social and environmental satisfaction.

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## REFERENCES.


Allen, J.D. and Walker, J.C.F. (1989) New Zealand Forestry in Search of a New Beginning. *New Zealand Forestry*, Vol.34, No.2. August: 4-7.

Allison, G.T. (1971) Essence of Decision. Explaining the Cuban Missile Crisis. Boston, Little Brown and Co. 338p.

Anderson, E. N. Jr. (1987) A Malaysian Tragedy of the Commons. In McCay, B.J. and Acheson, J.M. (Eds) (1987) The Question of the Commons. The Culture and Ecology of Communal Resources. Tucson, University of Arizona Press. Chapter 16. p.327-343.

Anon (1988) Dramatic Fall-off in New Planting Predicted. *Forestry Bulletin*, Vol 3, No.4. October: 1-2. Wellington, New Zealand Forest Owners Association.

Australian Department of Agriculture (1975) Multiple Use of Forest Resources. Canberra, Forestry and Timber Bureau, Australian Department of Agriculture. 58p.

Australian Bureau of Statistics (1987) Livestock and Livestock Products, Tasmania 1986-87. Table 29.

Bachrach, P. and Baratz, (1970) Power and Poverty. Theory and Practice. New York, Oxford University Press. 220p.

Baines, J.T.; Wright, J.C.; Taylor, C.N.; Leathers, K.L. and O'Fallon, C. (1988) The Sustainability of Natural and Physical Resources - Interpreting the Concept. Studies in Resource Management No.5. Lincoln College, Centre for Resource Management. 63p.

Batchelor, C.L. (1988) Possums as a Resource. In Batchelor, C.L. and Cowan, P.E. (1988) Review of the Status of the Possum (*Trichosorus vulpecula*) in New Zealand. Christchurch, Forest Research Centre, Forest Research Institute. Unpublished draft. p.78-86.

Berkes, F. (1985) The Common Property Resource Problem and the Creation of Common Property Rights. *Human Ecology*, 13, (2): 187-208.

Berkes, F. (1987) Common Property Resource Management and Cree Indian Fisheries in Subarctic Canada. In McCay, B.J. and Acheson, J.M. (Eds) (1987) The Question of the Commons. The Culture and Ecology of Communal Resources. Tucson, University of Arizona Press. Chapter 3. p.66-91.

Best, Elsdon (1942) Forest Lore of the Maori. Wellington, Dominion Museum. 1979 Reprint by AMS Press, New York. 503p.

Blake, H. and Wallace, R. (1987) Commodity Price Projections: Cashmere and Mohair. Wellington, Economics Division, Ministry of Agriculture and Fisheries. 13p.

Boston, J. and Holland, M. (1987) The Fourth Labour Government. Transforming the Political Agenda. In Boston, J and Holland, M (Eds.) (1987)

The Fourth Labour Government. Auckland, Oxford University Press. Chapter 1, p.1.

Bray, P. (1988) Personal Communication. Leeston, Airborne Honey Ltd. 27 October.

Bray, P. (1989) Personal Communication. Leeston, Airborne Honey Ltd. 26 June.

Bronowski, J. (1973) The Ascent of Man. London, BBC. 1978 Edition. 448p.

Brooker, S.G.; Cambie, R.C. and Cooper, R.C. (1988) Economic Native Plants in New Zealand. Christchurch, Botany Division, Department of Scientific and Industrial Research (DSIR). 130p.

Brown, L.R. (1973) World Without Borders. New York, Vintage Books, Random House. Chapter 17: 342-364.

Bruce, J.W. and Fortmann, L. (1988) Why Land Tenure and Tree Tenure Matter. In Fortmann, L. and Bruce, J.W. (Eds) (1988) Whose Trees? Proprietary Dimensions of Forestry. Boulder, Westview Press. Chapter 1. p.1-9.

Brunt, P.J. (1984) Hive Products. *New Zealand Beekeeper*. Summer: 10-12.

Bryant, C. (1989) Personal communication. Advisory Officer for the West Coast. Christchurch, Department of Internal Affairs. 23 August.

Burch, W.R., Jr. (1975) Time, Land and People - Old Resources and New Institutions. In Burch, W. R.; Wager, A.J. and Herman, R.K. (1975) Forests and Future Resource Conflicts - Time, Land and People - Old Resources and New Institutions. *Northwest Area Foundation Forestry Series*. Corvallis, Oregon, School of Forestry. 51p.

Burch, W.R., Jr. (1976) Who Participates - A Sociological Interpretation of Natural Resource Decisions. *Natural Resources Journal*, Vol.16 (1): 41-54.

Burch, W.R., Jr. (1979) The Social Meaning of Forests. *The Humanist*, Vol.39, (6): 39-44.

Burch, W.R., Jr. (1981) Summary: Towards Social Forestry in the Tropics. In Mergen, F. (Ed) (1981) Tropical Forests. Utilisation and Conservation. Proceedings of an International Symposium. New Haven, Connecticut, Yale University, School of Forestry and Environmental Studies. p.195-199.

Burch, W.R., Jr. (1988) The Uses of Social Science in the Training of Professional Social Foresters. *Journal of World Forest Resource Management*, Vol.3, No.2: 73-109.

Burch, W. R. Jr. and Bormann, F. H. (1975) Beyond Growth - Essays on Alternative Futures. New Haven, Yale University, School of Forestry and Environmental Studies. Bulletin No.88. 228p.

Burrows, C. J. (Ed) (1974) Handbook to the Arthur's Pass National Park. Christchurch, Arthur's Pass National Park Board. 3rd Edition. 104 p.

Buttimer, A. (1971) Society and Milieu in the French Geographic Tradition. Chicago, Rand McNally and Co. 226p.

Canterbury United Council (1985) Regional Forestry Strategy, Objectives and Policies. Report No. 321a. Christchurch, Canterbury United Council. July. 8p.

Carter, C.E. (1988) Tb Accreditation Scheme for Deer. *Surveillance*, 15, (1): 8.

Caughley, G. (1989) Control of Wild Animals. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.101-103.

Caygill, D. (1989) 1989 Budget and Tables. Wellington, Government Printer. 48p.

Challies, C.N. (1985) Establishment, Control and Commercial Exploitation of Wild Deer in New Zealand. *The Royal Society of New Zealand, Bulletin* 22: 23-36.

Challies, C.N. (1986) Effects of Commercial Hunting on Red Deer Populations. *What's New*, No 144, Rotorua, Forest Research Institute. 4p.

Challies, C.N. (1989) Proposed New Structure for the Wild Animal Recovery Industry. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.89-91.

Charlton, R.R. (1988) Personal communication. Fur Manager, The Kiwi Fur Co. (Wrightson-Dalgety, Ltd), Dunedin. 24 November.

Charlton, R.R. (1989) Personal communication. 10 July.

Chavasse, C.G.R. (1978) Production Values of Native Forests - Water, Wood, Animals and Tourism. *New Zealand Journal of Forestry*, 23, (2): 179-201.

Chavasse, C.G.R. (1986) Conservation of Native Forests in Westland: the role of the New Zealand Forest Service. *New Zealand Forestry*, 31, (3): 4-6.

Childe, Gordon (1942) What Happened in History. Harmondsworth, Middlesex, Penguin Books. 1965 Edition. 292p.

Chopra, K. (1987) Social Forestry Projects - An Approach to Evaluation. *Resources Policy*, Vol.13, No.2, June: 142-158.

Chu-Chou, Myra (1984) Utilisation of Forest Waste for Cultivation of Edible Forest Mushrooms. In Forest Industries and Biotechnology, Proceedings of the 16th New Zealand Biotechnology Conference, Palmerston North, Massey University, May. p.51-58.

Clarke, C.M.H. (1976) Fallow Deer in the North and South Island. *New Zealand Wildlife*, Issue 52, Vol.7: 1-9.

Clapperton, B.K.; Alspach, P.A.; Moller, H. and Matheson, A.G. (in press) The Impact of the Common and German Wasps (*Hymenoptera: Vespidae*) on the New Zealand Beekeeping Industry. 21p. plus appendices.

Clawson, Marion (1978) The Concept of Multiple Use Forestry. *Environmental Law*, Vol.8: 281-308.

Clawson, Marion (1988) Public Forests in New Zealand and in the United States. Washington, D.C., Resources for the Future. Discussion Paper Series No. RR88-01. 39p.

Clements, K.P. (1980) From Right to Left in Development Theory. Singapore, Institute of Southeast Asian Studies, Occasional Paper No.61. 42p.

Clements, K.P. (1981) Think Big, Think Again, Think People: A Critique of the National Government's Growth Strategy. Proceedings of the 11th N.Z. Geography Conference. Wellington, Victoria University. p.24-27.

Clifton, N. (1988) Personal Communication. Christchurch, Ministry of Forestry.

Clout, M.N. and Barlow, N.D. (1982) Exploitation of Brushtail Possum in Theory and Practice. *New Zealand Journal of Ecology* 5: 29-35.

Conway, M.J. (1989) Personal communication. Interviewed in Stoke, Nelson on 14 March, 1989.

Cohen, A.P. (1978) Ethnographic Method in the Real Community. *Sociologica Ruralis*, Vol.18, No.1: 1-23.

Daly, H. (1973) The Steady State Economy: Towards a Political Economy of Biophysical Equilibrium and Moral Growth. In Daly, H. (Ed) (1973) Towards a Steady State Economy. San Francisco, W.H. Freeman and Company. p.149-174.

De Goldi, J. (1984) The Sphagnum Moss Industry on the West Coast. Wellington, NZFS. 61p.

De Goldi, J. (1985) Sphagnum Moss Research Project Report. Christchurch, Department of Scientific and Industrial Research . Unpublished draft.

Debnam, G. (1984) The Analysis of Power. New York, St. Martin's Press. 112p.

Denne, T. (1982) Sphagnum on the West Coast, South Island: Resource Characteristics, the Industry and Land Use Potential. M.Sc. Thesis, University of Canterbury.

Department of Forestry (1920) Report of the Director to Parliament. Wellington, Department of Forestry. p.7-8.

Department of Internal Affairs (n.d.) SCOPE: Small Co-operative Enterprise Scheme. Wellington, Department of Internal Affairs. Pamphlet.

Department of Maori Affairs (1957-61) Arahura Maori Reserve. Sale of Timber. File No. M.A. 6, 1/2. Christchurch, Ngai Tahu Maori Trust Board.

Department of Statistics (1986) Guide to Filling in your Personal Questionnaire. New Zealand Census of Population and Dwellings. Wellington, New Zealand Department of Statistics. March 4.

Department of Statistics (1987) New Zealand Census of Population and Dwellings, 1986. Regional Statistics, Series B, Reports No.1 (New Zealand summary), No.18 (West Coast) and No.19 (Canterbury). Wellington, New Zealand Department of Statistics.

Department of Statistics (1989) Real Disposable Income Indexes and Related Measures for Full-time Wage and Salary Earners: March 1989 Quarter. Wellington, New Zealand Department of Statistics. News release, Catalogue No.09.502, Set No.89-90/102.

Department of Trade and Industry (1985) Regional Development Programme. Wellington, Department of Trade and Industry. 16p.

Department of Trade and Industry (1987) West Coast Directions for Development. Wellington, Department of Trade and Industry. 17p.

Department of Trade and Industry (1988) Introducing the Regional Development Investigation Grant Scheme. Wellington, Department of Trade and Industry. Pamphlet.

Department of Trade and Industry (n.d.) Community Employment Investigation Scheme (CEIS). Wellington, Department of Trade and Industry. Pamphlet.

Devery, Barbara (1988) Personal Communication. Harihari. 9 June.

Dickson, D. (1975) The Politics of Alternative Technology. New York, Universe Books. 224p.

Douglas, R. and Callen, L. (1987) Towards Prosperity. Auckland, David Bateman. 254p.

Douglas, R. (1980) There's Got to be a Better Way. Wellington, Fourth Estate Books. 79p.

Dunn, P.D. (1978) Appropriate Technology. Technology with a Human Face. London, Macmillan. 220p.

Easton, B. (1967) Labour's Economic Strategy. In Boston, J and Holland, M (Eds.) (1987) The Fourth Labour Government. Auckland, Oxford University Press. Chapter 8. p.134-150.

Eastwood, D.R. and Hansen, J.J. (1987) Corporatisation on the West Coast. A Stocktake of the Activities of the West Coast Support Co-ordinating Committee 1987. Unpublished, available from West Coast United Council, Greymouth. Appendix 2, Tables II, IV, VI, Appendices 3 and 5.

Eckholm, E. (1979) Planting for the Future: Forestry for Human Needs. Washington, D.C. Worldwatch Institute. Paper No.26. 64p.

Edquist, C. and Edqvist, O. (1979) Social Carriers of Techniques for Development. *Journal of Peace Research,* No.4, Vol.XVI: 313-331.

Evison, H.C. (1987) Ngai Tahu Land Rights and the Crown Pastoral Lease Lands in the South Island of New Zealand. Christchurch, Ngai Tahu Maori Trust Board. 72p.

Evison, H.C. (1988) The Crown's Past Attempts to Settle Maori Land Claims. *The Press*, Christchurch, 13 May.

Falk, R. A. (1982) Contending Approaches to World Order. In Falk, Richard A.; Kim, Samuel S. and Mendlowitz, Saul H. (Eds) (1982) Towards a Just World. Boulder, Colorado. Westview Press. Section 3. p.146-174.

Falk, R. A. (1983) The End of World Order. New York, Holmes and Meier. Chapter 11. p.243-274.

Familton, A.K. (1989) Personal communication. Interviewed in Wellington on 20 March, 1989.

F.A.O. (1978) Forestry for Local Community Development. Forestry Paper No.7. Rome, Food and Agricultural Organisation of the United Nations. 35p.

F.A.O. (1981) Forestry and Rural Development. F.A.O. Forestry Paper No.26. Rome, Food and Agricultural Organisation of the United Nations. 114p.

Fife, D. (1971) Killing the Goose. *Environment,* 13, (3): 20-27. Reprinted In Hardin, Garrett and Baden, John (1977) Managing the Commons. San Francisco, Freeman. p.76-81.

Fischman, R.L. and Nagle, R.L. (1989) Corporatisation: Implementing Forest Management Reform in New Zealand. Unpublished report. 65p.

Foley, G. and Barnard G. (1984) Farm and Community Forestry. London, Earthscan -International Institute for the Environment and Development, Technical report No. 3, p.13 and 23.

Forestry Advisory Group (1982) Forestry Development in the Canterbury Region. Christchurch, Canterbury United Council. Report No.280. 34p.

Forestry Commission of Tasmania (1988) A Survey of Woodcraft in Tasmania. Hobart, Forestry Commission of Tasmania. 19p.

Ford Foundation (1985) People and Forests: A Report of a Ford Foundation Meeting on Social Forestry and Agro-Forestry, Naro Moru, Kenya. 20-22 March. New York, Rural Poverty and Resources Program, The Ford Foundation. 43p. plus appendices.

Forde, C. Daryll (1964) Habitat, Economy and Society. London, Methuen. 500p.

Forests Act (1949) Wellington, Government Printer. Sections 26 and 63c.

Fortmann, L. and Bruce, J.W. (Eds) (1988) Whose Trees? Proprietary Dimensions of Forestry. Boulder, Westview Press. 341p.

Fraser, K.W. and Batchelor, C.L. (1989) Recreation Hunting in Future Management of Wild Animals. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.126-129.

* Frogley, C. (1988) Personal communication. Proprietor, Sphagnum Moss Products, Runanga.

Froude, V.; Gibson, A. and Carlin, B. (1985) Indigenous Forestry in New Zealand. Wellington, Commission for the Environment. 42p.

Galtung, J. (1982) Self Reliance: An Overriding Strategy for Transition. In Falk, Richard A.; Kim, Samuel S. and Mendlowitz, Saul H. (Eds) (1982) Towards a Just World. Boulder, Colorado. Westview Press. Section 37. p.602-622.

Gilbertson, I. (1989) Department of Conservation, Hokitika. 9 May.

* Gillions, L. (1989) Personal communication. Chairman, West Coast Timber Association.

Given, D. (1989) Personal communication. Lincoln, Botany Division, Department of Scientific and Industrial Research. 15 September.

Gleason, C. D. (1982) Prospects for Intensive Management of West Coast Beech Forests. *New Zealand Journal of Forestry*, 27, (1): 77-88.

Goodland, R. and Ledec, G. (1987) Neoclassical Economics and Principles of Sustainable Development. *Ecological Modelling*, 38: 19-46.

Gregersen, H. M. (1988) People, Trees and Rural Development. The Role of Social Forestry. *Journal of Forestry*, Vol.86, No.10: 22-30.

Gregory, Bob (1987) The Reorganisation of the Public Sector. The Quest for Efficiency. In Boston, J. and Holland, M. (Eds.) (1987) The Fourth Labour Government. Auckland, Oxford University Press. Chapter 7. p.111-133.

Graetz, B. (1985) The Potential of Mail Surveys. *Australia and New Zealand Journal of Sociology*, Vol.21, No.3, November: 445-455.

Griffin, D.M.; Shepherd, K.R. and Mahat, T.B.S. (1988) Human Impacts on Some Forests of the Middle Hills of Nepal. Part 5. Comparisons, Concepts and some Policy Implications. *Mountain Research and Development*, Vol. 8, 1: 43-52.

Groome, K.H.; Simmons, D.G. and Clark, L.D. (1983) The Recreational Hunter: Central North Island Study. Christchurch, Department of Horticulture, Landscape and Parks, Lincoln College, University College of Agriculture. Bulletin No. 38, p.52-55.

Hardin, Garrett (1968) The Tragedy of the Commons. *Science*, 162: 1243-1248.

Hardin, Garrett (1977) The Limits of Altruism: An Ecologist's View of Survival. Bloomington and London, Indiana University Press. 154p.

Hardin, Garrett and Baden, John (1977) Managing the Commons, San Francisco, Freeman. 294p.

Harris, R.J. (1975) A Primer of Multivariate Statistics. New York, Academic Press. 332p.

Hartnell, J. (1988) Personal communication. Hororata, Canterbury, Hororata Honey Exports Ltd. 27 October.

Henderson, Hazel (1978) Creating Alternative Futures. The End of Economics. Perigee Books. New York, G.P. Putnam's Sons. 418p.

Hermann, R.K. (1975) Man and Forests - A Prodigal Relation. In Burch, W.R., Jr; Wagar, A.J. and Hermann, R.K. Forests and Future Resource Conflicts: Time, Land and People - Old Resources and New Institutions. *Northwest Area Foundation Forestry Series.* Corvallis, Oregon, School of Forestry. p.29-51.

Hill, R.M. (1984) Establishing Validity in the Social Sciences: an Empirical Illustration. *New Zealand Science Review*, Vol.41, No.4: 59-62.

Holloway, J.S. (1982) Editorial Comment: Wither the Forest Service? *New Zealand Journal of Forestry*, Vol 27, (1): 1-5.

Holloway, J.S. (1989) The Future of Wild Animals. A Department of Conservation Viewpoint. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.10-17.

Hoogvelt, A.M.M. (1978 ) The Sociology of Developing Societies. London, Macmillan. 2nd Edition. 209p.

Hoogvelt, A.M.M. (1982 ) The Third world in Global Development. London, Macmillan. 260p.

Hooker, R.H. (1986) The Archaeology of the South Westland Maori. Hokitika, New Zealand Forest Service. 78p. plus figures.

Hooker, R.H. (1988) Evidence presented before Waitangi Tribunal. Ngai Tahu Claim - Wai-27, Mahinga Kai. Christchurch, Ngai Tahu Maori Trust Board. 8p.

Houghton, R. and Caskey, M. (1985) West Coast Small Businesses in Wood Manufacturing. Dunedin, Business Development Centre, University of Otago. 27p.

Houston, J. M. (1963) A Social Geography of Europe. London, Duckworth. 271p.

Howe, D. (1989) Personal communication. Secretary, Sphagnum Moss Association. Hokitika. 19 July.

Howse, T. (1989) Personal communication. Christchurch, Ngai Tahu Maori Trust Board.

Hunter, L. (1984) Tropical Forest Plantations and Natural Stand Management: A National Lesson from East Kalimantan? *Bulletin of Indonesian Economic Studies,* Vol.XX, No.1, April: 98-116.

Hutchinson, F. E. (1931) An Approach to the Management of the Rimu Forests. *Te Kura Ngahere:* 3, (1): 17-24.

International Union for Conservation of Nature and Natural Resources (1980) World Conservation Strategy. International Union for Conservation of Nature and Natural Resources (I.U.C.N.). Not paginated.

James, I. L. (1980) Selection Forestry in Europe and South Westland. Wellington, NZFS, Forest Research Institute, Indigenous Forest Management Report No. 26, (unpublished).

James, I.L. (1989) Personal communication. Harihari. 20 July.

Johnston, D. R. (1975) Forest Policy - Formulation and Implementation. *Long Range Planning*, Dec: 30-36.

Jones, C. (1989) Safari Hunting in New Zealand. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.28-31.

Jewell, A. (1988) Personal communication. Former Managing Director, Timber Division, Fletcher Organisation, (now Fletcher Challenge Ltd).

Kardell, L. (1986) Occurrence and Berry Production of *Rubus chamaemorus L., Vaccinium oxycoccus L.* and *Vaccinium microcarpum Turcz.* and *Vaccinium vitis-idaea L.* on Swedish Peatlands. *Scandinavian Journal of Forest Research*, 1: 125-140.

Kelly, M. (1988) Mair Astley Ready for Global Risks. *NBR Weekend Review.* National Business Review. September 30: 15-16.

Kensington, W.C. (1909) Forestry in New Zealand. Wellington, Department of Lands. p.76.

Kiger, J.E.; Loeb, S.E. and May, G.S. (1984) Accounting Principles. New York, Random House. Chapter 20, Financial Statement Analysis, p.660-684.

Killen, B. (1988) Ivory Coast Forests are Vanishing Fast. Christchurch, *The Press.* March 5.

Kim, S.S. (1984) The Quest for a Just World Order. Boulder, Colorado, Westview Press. Chapter 8: 301-342.

Kirkland, A. (1973) Beech Forests. Wellington, New Zealand Forest Service. 48p.

Kirkland, A. (1984) Guest Editorial. *New Zealand Forestry*, Vol.29, (1): 1-5.

Kirkland, A. (1988) The Rise and Fall of Multiple-use Forest Management in NZ. *New Zealand Forestry*, Vol.33, (1): 9-12.

Kirkland, A. (1989) Personal communication. Interviewed in Wellington on 20 March, 1989.

Kirkland, A. and Trotman, I.G. (1974) Indigenous Forests of New Zealand. In Proceedings of Forestry Development Conference. Wellington. Part 2. Appendices, p.12-17.

Kumar, S. (Ed) (1982) The Schumacher Lectures. Abacus edition. London, Sphere Books Ltd. 198p.

Lange, D. (1986) Breaking the Confidence Barrier. Speech given at Gisborne Regional Development Forum, 21 October. Wellington, Prime Minister's Department. p.5-6.

Lanly, J.P. and Clement, J. (1982) Present and Future Forest and Plantation Areas in the Tropics. In Oldeman, R.A.A. (Ed) Tropical Hardwood Utilisation: Practice and Prospects. The Hague, Martinus Nijhoff/Dr W Junk. Chapter 4. p.47-92.

Laszlo, E.; Lozoya, J.; Bhattacharya, A.K.; Estevez, J.; Green, R. and Raman, V. (1980) The Obstacles to the New International Economic Order. New York, Pergamon Press. Chapter 6: 92-103.

Leach, J. (1987) Destruction of Forests Devastating for Poor. Christchurch, *The Press*. August 15.

Lee, R.B. and DeVore, I. (Eds) (1979) Man the Hunter. New York, Aldine Publishing Co. Eighth Printing. 415p.

Lee, R.G. (1984) Sustained-Yield and Social Order. In Steen, H.K. (Ed) (1984) History of Sustained-Yield Forestry: A Symposium. Forest History Society Inc., U.S.A. for International Union of Forest Research Organisations. p.90-100

Leslie, A. J. (1977) The Concept and Philosophy of Multiple-Use Forest Management - New Zealand. Paper presented at Australian and New Zealand Association for the Advancement of Science, 48th Congress. Melbourne. Copy obtained from School of Forestry, University of Canterbury. Unpublished. 11p.

Little, Arthur D., Inc. (1960) Industrial Development Possibilities on the West Coast (South Island, New Zealand). Submitted to the West Coast Committee of Inquiry. Unpublished. 53p.

Livingstone, P. (1988) Cattle Tb - An Update on the Situation in New Zealand. *Surveillance*, 15, (1): 3-7.

Lloyd, William Forster (1833) On the Checks to Population. In Hardin, Garrett and Baden, John (1977) Managing the Commons. San Francisco, Freeman. Chapter 2. p.8-15.

Lucas, B. (1989) Personal communication. Interviewed in Wellington on 21 March, 1989.

Lukes, S. (1974) Power: A Radical View. London, Macmillan. 63p.

Mahat, T.B.S.; Griffin, D.M. and Shepherd, K.R. (1986a) Human Impacts on Some Forests of the Middle Hills of Nepal. 1. Forestry in the Context of the Traditional Resources of the State. *Mountain Research and Development,* Vol.6, 3: 223-232.

Mahat, T.B.S.; Griffin, D.M. and Shepherd, K.R. (1986b) Human Impacts on Some Forests of the Middle Hills of Nepal. Part 2. Some Major Human Impacts Before 1950 on the Forests of Sindhu Palchok and Kabhre Palanchok. *Mountain Research and Development,* Vol.6, 4: 325-334.

Mahat, T.B.S.; Griffin, D.M. and Shepherd, K.R. (1987a) Human Impacts on Some Forests of the Middle Hills of Nepal. Part 3. Forestry in the Subsistence Economy of Sindhu Palchok and Kabhre Palanchok. *Mountain Research and Development,* Vol.7, 1: 53-70.

Mahat, T.B.S.; Griffin, D.M. and Shepherd, K.R. (1987b) Human Impacts on Some Forests of the Middle Hills of Nepal. Part 4. A Detailed Study of Southeast Sindhu Palchok and Northeast Kabhre Palanchok. *Mountain Research and Development,* Vol.7, 2: 111-134.

Mason, A.M. (1987) Evidence presented at the Waitangi Tribunal. Greymouth, 2 December, 1987.

Matheson, A.G. and Wallingford, N. (1988) New Zealand Beekeeping - An Industry Profile. Wellington, National Beekeepers' Association of New Zealand (Inc). Not paginated.

Mathur, H.N. and Soni, P. (1986) India's Forest Resources. In Bandhu, D. and Garg, R.K. (1986) Social Forestry and Tribal Development. Indian Environmental Society, Dehra Dun. p.126-150.

McAloon, J. (1987) Evidence presented to the Waitangi Tribunal in Greymouth on 1 December. Christchurch, Ngai Tahu Maori Trust Board. 29p.

McAloon, J. (1988) Gold and Maori Land Sales on the West Coast. Christchurch, *The Press.* 22 May.

McCaskill, M. (1954) The Poutini Coast: A Geography of Maori Settlement in Westland. *New Zealand Geographer,* 10, (2):134-150.

McCay, B.J. and Acheson, J.M. (1987) Preface. In McCay, B.J. and Acheson, J.M. (Eds) (1987) The Question of the Commons. The Culture and Ecology of Communal Resources. Tucson, University of Arizona Press. p.xiii.

McGlone, M.S. (1983) Polynesian Deforestation of New Zealand: A Preliminary Synthesis. *Archaeol. Oceania,* 18: 11-25.

McKelvey, P.J. (1984) Lecture Notes. Christchurch, School of Forestry, University of Canterbury. Unpublished.

McKelvey, P.J. (1984) Eighteen Years On. *New Zealand Journal of Forestry,* Vol.29, (1): 19-23.

McLuhan, H.M. (1967) The Medium is the Message. Harmondsworth, Middlesex, Penguin Books. 159p.

McNab, M. (1989) Personal communication. Advisory Officer. Christchurch, Department of Internal Affairs. 22 August.

McSweeney, G. (1989) Wild Animals - A Conservation Perspective. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's

Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.25-27.

Meadows, Donella H.; Meadows, Dennis L.; Randers, Jorgen and Behrens, William W. (1972) The Limits to Growth. London, Earth Island Ltd. 205p.

Mercer, Barry (1987) Personal Communication.

Mercer, Barry (1988) Personal Communication. 17 May.

Mercer, Barry (1989) Personal Communication. 22 June.

Miller, G.T. and Armstrong, P. (1982) Living in the Environment. Belmont, Wadsworth, International Edition. 491p.

Minister for the Environment (1989a) Government Decision on South Westland Forests. Press Release, 27th February. Wellington, Ministry for the Environment. 6p.

Minister for the Environment (1989b) International Meetings Address Global Problems *Environment Update*, No.10. p.1.

Ministry for the Environment (1988a) South Westland South of the Cook River. Resource Management Study. Final Report of the South Westland Forests Working Party. Wellington, Ministry for the Environment. 35p.

Ministry for the Environment (1988b) Resource Management Law Reform. Synopsis of Submissions Received in Response to 'Directions for Change'. Wellington, Ministry for the Environment. Report No.21. 55p.

Ministry for the Environment (1989a) Challenges for Planners in New Resource Management Policies. *Environment Update*, No.12. p.6.

Ministry for the Environment (1989b) Declaration of the Hague. *Environment Update*, No.10. p.2.

Ministry for the Environment (1989c) The New Zealand Climatic Change Programme. Wellington, Impacts Working Group, Ministry for the Environment. Working Document. Unpublished. April.

Ministry of Agriculture and Fisheries (n.d.) The Effect on the Beekeeping Industry of the Proposed Beech Scheme Development in Westland. Prepared for New Zealand Forest Service. Unpublished. c.1976. 6p. plus maps (unlocatable).

Ministry of Forestry (1988) Statistics of the Forests and Forest Industries of New Zealand to 1987. Tables 4, 5, 7, 12, 16 and 24. Wellington, Ministry of Forestry. p.11, 13, 18, 25 and 33.

Ministry of Works and Development (1986) Hokitika Community Viability Study, Phase II. Greymouth, Town and Country Planning Directorate, Ministry of Works and Development. p.5.

Mishra, R. (1977) Society and Social Policy. London, Macmillan. p.81-84.

Moller, H. (1987) Honeydew - A South Island Beekeepers's Bounty. *The New Zealand Beekeeper.* Spring: 31-34.

Moller, H. (1989) Personal communication. 29 May.

Moller, H.; Tilley, J.A.V. (1986) Honeydew. A South Island Beech Forest Resource. *Alpha,* 58. Wellington, Department of Scientific and Industrial Research, Extension Information. August.

Moller, H.; Tilley, J.A.V.; Alspach, P.; Millar, I.R. and Plunkett, G.M. (1988) Impact of *Vespula* Wasps on Native Insects and Birds. Nelson, Ecology Division, Department of Scientific and Industrial Research. Report No.13. 45p.

Moser, C.A. and Kalton, G. (1971) Survey Methods in Social Investigation. Second Edition. London, Heinemann Educational Books Ltd. 549p.

Myers, N. (Ed) (1985) The Gaia Atlas of Planet Management. London, Pan Books. p.24-49.

Native Forest Action Council (1977a) The Maruia Declaration. Nelson, Native Forest Action Council. 2p.

Native Forest Action Council (1977b) Submissions on the Maruia Declaration. Presented to the Select Committee on Lands and Agriculture, September. Nelson, Native Forest Action Council. 22p.

Native Forest Action Council (1978) Supplementary Submissions on the Maruia Declaration. Presented to the Select Committee on Lands and Agriculture, 29 June. Nelson, Native Forest Action Council. 9p.

Native Forest Action Council (1987) The Con Bill: Please Contact Your M.P. *Maruia,* Vol 2, (3): 1-2. March 3.

Nature Conservation Council (1981) Integrating Conservation and Development. A Proposal for a New Zealand Conservation Strategy. Wellington, Nature Conservation Council. 61p.

New Zealand Forest Service (1954) Annual Report of Director-General to Parliament. Wellington, Government Printer. p.9-11.

New Zealand Forest Service (1956) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.8-10.

New Zealand Forest Service (1957) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.6-9.

New Zealand Forest Service (1959) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.23-24.

New Zealand Forest Service (1962) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.18.

New Zealand Forest Service (1963) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.5-8.

New Zealand Forest Service (1965) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.7-8.

New Zealand Forest Service (1966) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.5-6.

New Zealand Forest Service (1970) Statistics of the Forests and Forest Industries of New Zealand. Wellington, New Zealand Forest Service. Table 8 and p.6-7.

New Zealand Forest Service (1974) Invitation for Proposals to Use Wood from Beech Forests, West Coast of the South Island, New Zealand. Wellington, NZFS. 24p.

New Zealand Forest Service (1977) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.6-7.

New Zealand Forest Service (1980) Sawmills on the West Coast. Hokitika, NZFS, Westland Conservancy. Internal report. 157p.

New Zealand Forest Service (1983) Annual Report of the Director-General to Parliament. Wellington, New Zealand Forest Service. p.3-4.

New Zealand Forest Service (1985) Statistics of the Forests and Forest Industries of New Zealand. Wellington, New Zealand Forest Service. Table 16, p.25

New Zealand Forest Service and Department of Lands and Survey (1987) South Westland Management Evaluation Programme. Volume 1. Draft Resources Report. Hokitika, New Zealand Forest Service and Department of Lands and Survey. p.9.

New Zealand Forest Service (n.d.) Processing Returns from State and private sources. Hokitika, New Zealand Forest Service, unpublished.

New Zealand Institute of Foresters (1975) Institute of Foresters' Submission on the NZFS's Beech Schemes. *New Zealand Journal of Forestry*, 20, (2): 210-220.

New Zealand Officials Committee for the Environment (n.d.) Environmental Impact Report on Proposals of the Director-General of Forests - Utilisation of South Island Beech Forests. Wellington. p.7 and 34-36A.

New Zealand Tourist and Publicity Department (1987) New Zealand Visitor Statistics 1985-86. New Zealand Tourist and Publicity Department. p.14.

New Zealand Tourist and Publicity Department (1988a) The New Zealand Domestic Travel Study 1986/87. West Coast Regional Report. Wellington, New Zealand Tourist and Publicity Department. p.6, 7.

New Zealand Tourist and Publicity Department (1988b) New Zealand International Visitor Product Survey 1986/87. April 1985-March 1986. Regional Report. NZTP International Visitor Research Series 1987/1. Wellington, New Zealand Tourist and Publicity Department. p.15, 23.

New Zealand Tourist and Publicity Department (1988c) Implications of Tourism Growth in New Zealand. Tourism in the Western and Northern South Island: a Regional Profile. Wellington, New Zealand Tourist and Publicity Department. September. p.18.

New Zealand Tourist and Publicity Department (1988d) New Zealand International Visitor Survey 1986/87. General Report. NZTP International Visitor Research Series 1988/1. Wellington, New Zealand Tourist and Publicity Department. p.35, 53.

New Zealand Tourist and Publicity Department (1989a) The New Zealand Domestic Travel Study 1987/88. West Coast Regional Report. Wellington, New Zealand Tourist and Publicity Department. p.7, 37.

New Zealand Tourist and Publicity Department (1989b) New Zealand International Visitor Survey 1987/88. West Coast Report. NZTP International Visitor Research Series 1989/19. Wellington, New Zealand Tourist and Publicity Department. p.15, 29.

New Zealand Tourist and Publicity Department (1989c) Monthly Tourism Statistics for March 1989. New Zealand Tourist and Publicity Department. p.16.

Nicholls, J.L. (1983) The Extent and Variability of the Native Lowland Forest, In Thompson, K., Hodder, A P H. and Edmonds, A. S. Lowland Forests in New Zealand. Proceedings of a Symposium held at the University of Waikato in May, 1980. Hamilton, University of Waikato. 207p.

Noronha, R. and Spears, J. S. (1985) Sociological Variables in Forestry Project Design. In Cernea, M. M. (1985) Putting People First. Sociological Variables in Rural Development. New York, Oxford University Press. Chapter 8. p.227-266.

Norhtcote-Bade, S. (1971) Colonial Furniture in New Zealand. Wellington, Reed. 164p.

Olthof, G. (1989) Personal communication. Christchurch, Department of Conservation. 15 September.

Ophuls, William (1973) Leviathan or Oblivion? In Daly, H. (Ed) (1973) Towards a Steady State Economy. San Francisco, W.H. Freeman and Company. p.215-230.

Ophuls, William (1977) Ecology and the Politics of Scarcity. San Francisco, Freeman. 303p.

Orbell, M. (1985) The Natural World of the Maori. Auckland, William Collins Publishers in association with David Batemen Ltd. 230p.

Osmaston, F.C. (1968) The Management of Forests. London, George, Allen and Unwin. 384p.

Pacific Asia Travel Association/New Zealand Tourist and Publicity Department (1988) Report of PATA West Coast Task Force, 17-23 July. Wellington, Pacific Asia Travel Association/New Zealand Tourist and Publicity Department. 56p.

Pardo, R.D. (1985) Forestry for People: Can it Work? *Journal of Forestry*, Vol 83, No.12, December: 733-741.

Parkes, J.P. (1984) A Report to the Minister of Forests on the Distribution and Density of Thar (*Hemritagus jemlahicus*) in New Zealand. Christchurch, NZFS, Forest Research Institute, Protection Forestry Division. Unpublished. 39p.

Parkes, J.P. and Tustin, K.G. (1985) A Reappraisal of the Distribution and Dispersal of Female Himalayan Thar in New Zealand. *New Zealand Journal of Ecology*, Vol.8: 5-10.

Parkes, J.P. (1989) Options to Manage Wild Animals in New Zealand. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.67-71.

Parore, T. (1985) Maori Land and Forestry. Financing of Forest Development on Maori Land. Paper presented at University of Canterbury, 22 August. Whangarei, Department of Maori Affairs. Unpublished. 13p.

Peccei, A. (1981) One Hundred Pages for the Future. New York, Pergamen Press. 191p.

Pekelharing, C.J. and Reynolds, R.N. (1983) Distribution and Abundance of Browsing Mammals in Westland National Park in 1978, and Some Observations on their Impact on the Vegetation. *New Zealand Journal of Forestry Science*, (13), 3: 247-265.

Pekelharing, C.J. and Batchelor, C.L. (In press) The Effect of Control of Brushtail Possums (*Trichosurus vulpecula*) on Condition of a Westland Rata/Kamahi (*Metrosideros umbellata/Weinmannia racemosa*) Forest Canopy. Christchurch, Forest Research Centre, Forest Research Institute.

Peters, P. (1987) Embedded Systems and Rooted Models. The Grazing Lands of Botswana and the Commons Debate. In McCay, B.J. and Acheson, J.M. (Eds) (1987) The Question of the Commons. The Culture and Ecology of Communal Resources. Tucson, University of Arizona Press. Chapter 8. p.171-194.

Peterson, S. (1987) Personal communication. Westland Guiding Services, Franz Josef.

Poole, A.L. (1969) Forestry in New Zealand. Auckland, Hodder and Stoughton. 112p.

Poole, A.L. (1987) Lessons of History - Unheeded? *New Zealand Forestry*, Vol 32, (2): 4-5.

Poole, A.L. (1988) Kaingaroa: Deep in the Forest. *New Zealand Forestry*, Vol.33, (3): 4-7.

Poole, A.L. (1989a) Personal communication. Interviewed in Wellington on 20 March, 1989.

Poole, A.L. (1989b) Labour in the Wood Pile. *New Zealand Forestry*, Vol.34, No.2. August: 2-4.

Postman, N. and Weingartner, C. (1971) Teaching as a Subversive Activity. Penguin Books Ltd. 204p.

Poulsen, G. (1982) The Non-wood Products of African Forests. *Unasylva,* Vol.34, No.137: 15-21.

Price, C. and Nair, C.T.S. (1984) Cost-Benefit Analysis and the Consideration of Forestry Alternatives. *Journal of World Forestry Resource Management*, Vol.1: 81-104.

Rambo, A.T. (1984) Community Forestry - The Social View. In UNDP/East-West Centre/FAO Regional Office for Asia and the Pacific (1984) Community Forestry: Some Aspects. Proceedings of a Workshop on Community Forestry. Korat, Thailand, 22-29 Aug. 1983. p.39-46

Rao, Y.S. (1983) Social Forestry and Rural Development. Bangkok, FAO Regional Office for Asia and the Pacific. 49p. Also in Rao, Y S (1985) Building Success through People's Participation, *Unasylva*, Vol. 37, No.1: 29-35.

Reader, J. (1988) Human Ecology: How Land Shapes Society. *New Society*, Vol.8, September: 51-55.

Rebugio, Lucrecio L. (1985) Social Forestry: For What and for Whom? *Social Sciences in Forestry*, No.70, Vol.2, 3: 28-35.

Reunala, A. (1984) Forest as Symbolic Environment. In Saastamoinen, O.; Hultman, S.-G.; Elders Koch, N. and Mattsson, L. (Eds.) Multiple-Use Forestry in the Scandinavian Countries. Helsinki, Communicationes Instituti Forestalis Fenniae 120. p.81-85.

Richards, Bob (1988) Department of Conservation, West Coast Regional Office. Hokitika. Personal Communication.

Richardson, S.D. (1988) Changing Perceptions of Forestry - Some Implications for Forestry Education. Paper presented at Food and Agricultural Organisation of the United Nations (FAO) Asia Pacific Forestry Education Network, Bangkok. June. Unpublished. 19p.

Romm, J. (1982) A Research Agenda for Social Forestry. *The International Tree Crops Journal*, Vol.2: 25-59.

Rooney, R. (1988) Personal communication. Hokitika, Westland Frozen Products Ltd.

Rose, A.B.; Pekelharing, C.J. and Platt, K.H. (1988) Canopy Mortality in Westland Rata/Kamahi Forests. In Batchelor, C.L. and Cowan, P.E. (1988) Review of the Status of the Possum (*Trichosorus vulpecula*) in New Zealand. Christchurch, Forest Research Centre, Forest Research Institute. Unpublished draft. p.33-41.

Rose, A.B.; Pekelharing, C.J. and Hall, G.M. (1988) Forest Dieback and the Impact of Brushtail Possums in the Otira, Deception and Taramakau

Catchments, Westland. Christchurch, Forest Research Centre, Forest Research Institute. 27p.

Rosenau, J.N. (1967) The Premise and Promises of Decision-Making Analysis. In Charlesworth, J. C. (Ed) (1967) Contemporary Political Analysis. New York, Free Press. p.189-211.

Rosenberg, W. (1986) The Magic Square. Christchurch, New Zealand Monthly Review Society Inc. 128p.

* Roxburgh, G. (1989) Personal communication. Secretary of West Coast Branch, New Zealand Beekeepers Association. Karamea, 14 June.

Salmon, G. (1989) Can Opposing Views be Reconciled. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.104-108.

SAS Institute Inc. (1985) SAS User's Guide: Statistics. Version 5 Edition. Cory, North Carolina. SAS Institute Inc. Chapter 12. p.139-154.

Saunders, P. (1979) Urban Politics. A Sociological Interpretation. London, Hutchison. p.336-346.

Secretary for the Environment (1986a) West Coast Forests. Integrating Conservation and Development. Preliminary Report of the West Coast Working Party. Wellington, Ministry for the Environment. 59p., plus references.

Secretary for the Environment (1986b) West Coast Forests. Integrating Conservation and Development. Final Report of the West Coast Working Party. Wellington, Ministry for the Environment. 47p., plus appendices.

Secretary for the Environment (1989) What is the Role of the Ministry? *Environment Update*, No.10, April. p.3-4.

Schnaiberg, A. (1982) Did You Ever Meet a Payroll? Contradictions in the Structure of the Appropriate Technology Movement. *Humboldt Journal of Social Relations*. Vol.9, No.2, Spring/Summer: 38-62.

Schattschneider, E.E. (1960) The Semisovereign People. New York, Holt, Rinehart and Winston. 147p.

Schumacher, E.F. (1974) Small is Beautiful. Abacus edition. London, Sphere Books Ltd. 298p.

Schumacher, E.F. (1978) A Guide for the Perplexed. Abacus edition. London, Sphere Books Ltd. 172p.

Schumacher, E.F. (1980) Good Work. Abacus edition. London, Sphere Books Ltd. 147p.

Science and Technology Assessment Group (1982) Report to the Minister of Science and Technology on DSIR Visit to the Buller, 31 May - 4 June. DSIR Discussion Paper No.7. Wellington, Department of Scientific and Industrial Research. 23p.

Shepherd, K.R. (1983) Community Forestry-Concepts and Reality. Paper presented at an International Workshop on Managing the Tropical Forest. Gympie, Queensland, July-Aug. Sponsored by Australian Development Assistance Bureau, Canberra. p.317-327.

Shirley, I. (Ed.) (1982) Development Tracts: The Theory and Practice of Community Development. Palmerston North, Dunmore Press. Chapter 1, p.9-27.

Simpson-Housley, P. (1980) West Coasters and the West Coast Forests. Rotorua, Forest Research Institute, Production Forestry Division. New Zealand Forest Service. Report No.144. 48p.

Simon, H.A. (1983) Reason in Human Affairs. Oxford, Basil Blackwell Publisher. 115p.

Simmons, D. and Devlin, P.J. (1981) The Recreational Hunter. Christchurch, Department of Horticulture, Landscape and Parks, Lincoln College, University College of Agriculture. Bulletin No. 33, p.23.

Sinclair, R. (1979) Tasmanian Wood Skills Resource Investigation. Hobart, Department of Planning and Development . 64p.

Slade, R.H. and Campbell, J.G. (1986) Monitoring and Evaluation of Social Forestry in India - An Operational Guide. Forestry Paper No.75. Rome, FAO. 218p.

Smith, J. (1989) Personal Communication. Former apiary advisory officer, Ministry of Agriculture and Fisheries, Christchurch.

State Forest Service (1938) Annual Report of Director to Parliament. Wellington, Government Printer. p.5, 7.

State Forest Service (1939) Annual Report of Director to Parliament. Wellington, Government Printer. p.2-3.

Stillman, P. G. (1975) The Tragedy of the Commons: A Re-analysis. *Science*, Vol 4, No.2: 12-15.

Sweet, G.B. (1977) Editorial Comment. *New Zealand Journal of Forestry*, 22, (2): 169-176.

Stephens, R.J. and Wells, C. (1984) The Regional Economic and Social Impact of a Punakaiki National Park. Wellington, Victoria University. 105p.

Tainui, Buddy (1989) Personal Communication. Hokitika.

Tau, H.R. and Ngai Tahu Trust Board, (1987) Evidence of Claims given before the Waitangi Tribunal. Christchurch, West Ward and Lascelles, Solicitors. 7p.

Taylor, C. (1988) Proprietor, Taimex Trading Co. Furriers. Dunedin. 29 July.

Taylor, M.J. (1976) Dimensions of Regional Economic Health in New Zealand. *Pacific Viewpoint*, 17, (1): 37-48.

Thomas, B. (c.1985) Moss Farming in Karamea. Available from the author at Umere R D 3, Karamea. Prepared with the assistance of the New Zealand Forest Service, Hokitika. 31p.

Thomas, J.W. (1987) Multiple-use Forestry: Moving from Platitudes to Reality. The 1987 Starker Lectures. Northwest Forestry in Transition. Corvallis, College of Forestry, Oregon State University. p.43-52.

Thomson, A.P., Kirkland, A. and Miers, K.H. (1972) Planning for Multiple Use Management of New Zealand's Beech (*Nothofagus* spp) Forests. *N.Z. Journal of Forestry,* 17, (2): 170-179.

Thomson, A.P. (1989a) Personal communication. Interviewed in Wellington on 20 March, 1989.

Thomson, A.P. (1989b) Sale of the Crown's Commercial Forestry Assets. *New Zealand Forestry*, Vol.33, No.4. February: 5-6.

Thorpe, G. (1987) Personal communication. Hokitika. 18 August. Formerly of the Department of Lands and Survey.

Tilling, A.J. (1980) Rural Planning at District and Regional Level: Constraints, Possibilities and Achievements in the 1970's. In Cant, G. (1980) People and Planning in Rural Communities. Studies in Rural Change, No.4. Christchurch, University of Canterbury, Department of Geography. p.13-21.

Tilling, A.J. and Clifton, N. (1984) A Strategy for Special Purpose Timbers for the Canterbury Region. Christchurch, Canterbury United Council, Report No.313. 36p.

Tilling, A. J. (1986) Reflections on the Use of Visual Assessment in Regional Forest Development and Management in the Canterbury Region. In Bennett, E.H. (Compiler) Visual Assessments for Planning. Proceedings of a Workshop on Techniques and Applications. Christchurch, Town and Country Planning Directorate, Ministry of Works and Development. p.91-103.

Tilling, A.J. (1987) Personal Communication with Head of Department, School of Forestry, University of Canterbury.

Tilling, A.J. (1988a) Social Forestry in New Zealand. Lecture on Forestry and Society. Christchurch, School of Forestry. July 21. Unpublished.

Tilling, A.J. (1988b) Commercial and Technical Feasibility of the Alternative Use of West Coast Indigenous Forests. Available from the Ministry of Commerce (formerly the Department of Trade and Industry), Christchurch. 28p.

Tilling, A.J. (1988c) Multiple-use Indigenous Forestry on West Coast of South Island. *New Zealand Forestry*, Vol.32, 4: 13-18.

Tolba, M.K. (1987) Sustainable Development. Constraints and Opportunities. London, Butterworths. 221p.

Tweedale, S. (1989) The Future of Our Industry. *New Zealand Beekeeper*, Winter: 26-27.

Vyas, N.N. (1981) Tribals and Forest. In Vyas, N.N. (Ed) (1981) Social Forestry in Tribal Development. The MLV Tribal Research and Training Institute, Tribal Area Development Department, Rajasthan, Udaipur. India. 139p. Chapter 1. p.1-8.

Waghorne, M. (1977) The Environmental Movement in New Zealand. M.A. Thesis. Christchurch, University of Canterbury. 187p. Unpublished.

Wallis, T. (1989) Commercial Hunters. In New Zealand Deerstalkers Association (1989) The Future of New Zealand's Wild Animals. Seminar 2000: Proceedings. 21-22 November, 1988. Christchurch, New Zealand Deerstalkers Association. p.32-35.

Warburton, B. and Morgan, D. R. (1988) Possum Control by Hunters Compared with Aerial 1080 Poisoning. *What's New In Forest Research,* No.166. 4p. Rotorua, Forest Research Institute.

Wardle, J. (1978) The Integrated Management of Beech Forest. Paper presented at the Honeydew Seminar. 10 August. Christchurch, Advisory Services Division, Ministry of Agriculture and Fisheries. p.39-47.

Washburn, S.L. and Lancaster, C.S. (1979) The Evolution of Hunting. In Lee, R.B. and DeVore, I. (Eds) (1979) Man the Hunter. New York, Aldine Publishing Co. Eighth Printing. p.293-303.

Webber, D. (1978) Trade Unions and the Labour Party: The Death of Working Class Politics in New Zealand. In Levine, S. (Ed) (1978) Politics in New Zealand: A Reader. Sydney, George Allen and Unwin. Chapter 14. p.182-196.

Webber, M.M. (1969) Planning in an Environment of Change. Part II: Permissive Planning. *Town Planning Review*, Vol.39, (3): 277-295.

Weinstein, J. and Pillai, V.K. (1979) Appropriate Technology and Appropriating Technology: Alternative Approaches to the Transfer of Technology. *Social Development Issues*, Vol.3, 3: 37-53.

Wells, L.P. (1988) Personal Communication. Christchurch, MAFQual. 9 November.

Wendelken, W.J. and Hannan, R. F. (1974) Land - the Prime Resource. In Proceedings of Forestry Development Conference. Wellington, Forestry Development Council. 23p.

Wengert, N. (1976) Citizen Participation: Practice in Search of a Theory. *Natural Resources Journal*, Vol.16, (1): 23-40.

West, Katherine (1985) The Need for the Forestry Profession to Speak Out in the Public Debate. *Australian Forestry*, 48, (3): 146-151.

West, P.C. (1978) Some Sociological Aspects of Forestry Community Development Projects in Developing Countries. In Proceedings of 8th World Forestry Congress, Jakarta, 16-18 October. IUFRO. p.218-222.

West Coast Committee of Inquiry (1960a) Report on the West Coast. Wellington, Government Printer. 89p. including appendices.

West Coast Committee of Inquiry (1960b) Supplementary Report on the West Coast. Wellington, Government Printer. 22p.

West Coast Timber Industry Employees' Industrial Union of Workers (1985) Submission to West Coast United Council on Intention to Prepare West Coast Regional Planning Scheme, Draft Section V, Forestry. Greymouth, West Coast United Council. Unpublished.

West Coast United Council (1980) West Coast Regional Planning Scheme. Draft Section One. Greymouth, West Coast United Council. 70p.

West Coast United Council (1984a) Regional Planning Developments Bulletin: West Coast Region. Greymouth, West Coast United Council. p.1-2.

West Coast United Council (1984b) West Coast Employment Survey. Data file. West Coast United Council, Greymouth. Unpublished.

West Coast United Council (1985) West Coast Regional Planning Scheme. Draft Section V, Forestry. Greymouth, West Coast United Council. 163p.

West Coast United Council (1986) Public Submissions on the West Coast Regional Planning Scheme. Draft Section V, Forestry. Greymouth, West Coast United Council. Unpublished draft.

West Coast United Council v. Richard William Prebble and Roger Owen Douglas and The Attorney-General for New Zealand (1988) High Court Decision CP 47/88. Wellington, Department of Justice. February. 14p.

Westoby, J C (1975) Making trees serve people. *Commonwealth Forestry Review*, 54, (3, 4): 206-215.

Wilson, James A. (1977) A Test of the Tragedy of the Commons. In Hardin, Garrett and Baden, John (1977) Managing the Commons. San Francisco, Freeman. Chapter 12. p.96-111.

Wilson, K. (1987) South Westland Maori Submission on Land Utilisation and Allocation. Draft submission to the Working Party on South Westland chaired by the Secretary for the Environment. Unpublished. 8p.

World Commission on Environment and Development (1987) Our Common Future, (Chairman: Gro Harlem Brundtland). Oxford, Oxford University Press. 400p.

Young, B. (1989) Personal communication. North Canterbury beekeeper, Woodend, Christchurch. 21 June.

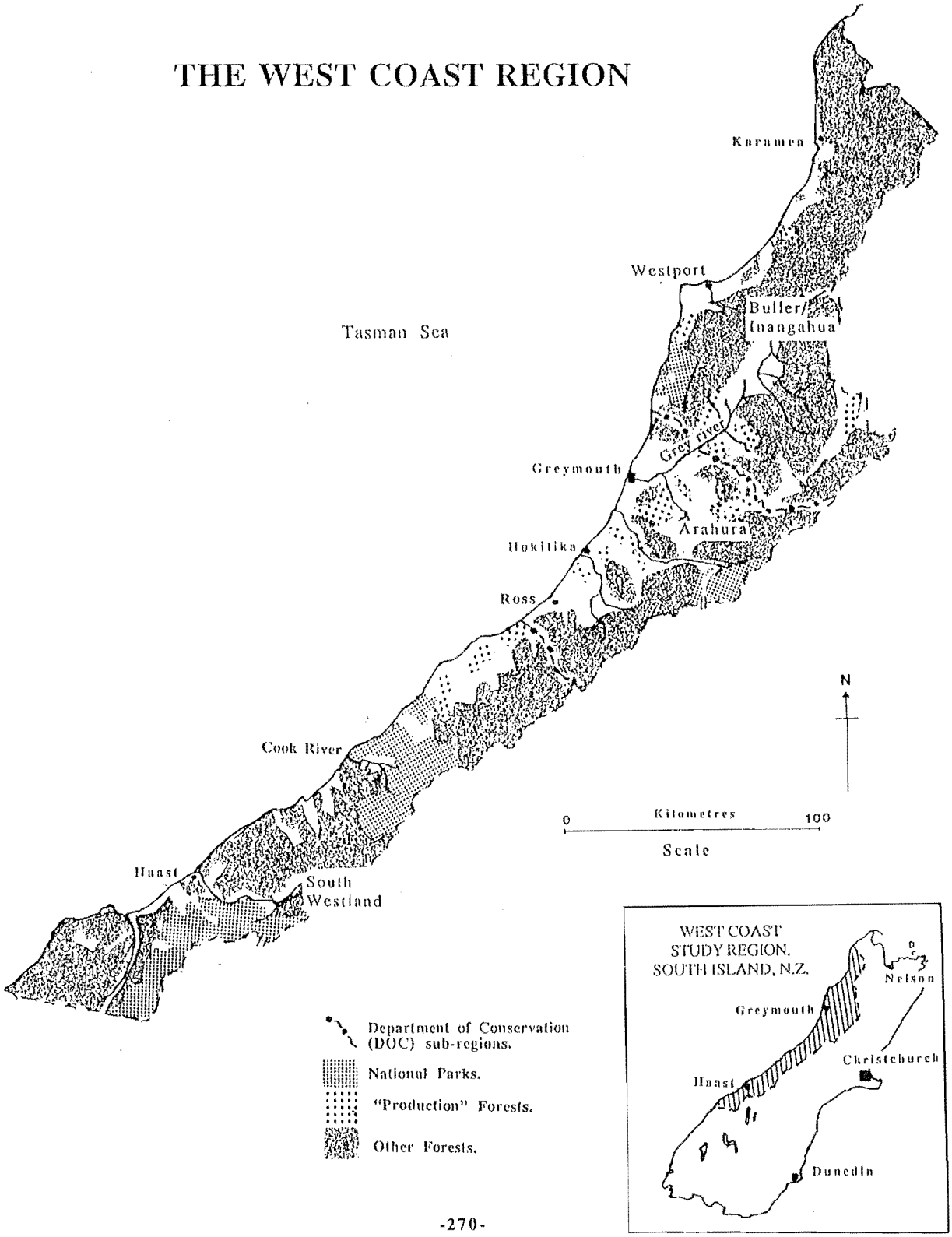
Zuckerman, M. (1988) Personal Communication. Craft furniture maker. Hokitika.

## GLOSSARY.

| | |
|---|---|
| DL&S | Department of Lands and Survey. |
| DOC | Department of Conservation. |
| DOSLI | Department of Survey and Land Information. |
| DSIR | Department of Scientific and Industrial Research. |
| DTI | Department of Trade and Industry. |
| JCNF | Joint Campaign on Native Forests. |
| Kaumatua | An elder. |
| Landcorp | Land Corporation of New Zealand. |
| LSB | Land Settlement Board, |
| MAF | Ministry of Agriculture and Fisheries. |
| MFE | Ministry for the Environment. |
| MOF | Ministry of Forestry. |
| NFAC | Native Forest Action Council. |
| NZFS | New Zealand Forest Service. |
| NZT&PD | New Zealand Tourist and Publicity Department. |
| RF&BPS | Royal Forest and Bird Protection Society. |
| SOE | State Owned Enterprise. |
| Tangata whenua | People of the land; local people. |
| Timberlands | New Zealand Timberlands Limited. |
| WCRWB | Westland Catchment and Regional Water Board. |
| WCUC | West Coast United Council. |
| WCRC | West Coast Regional Council |
| WCRDC | West Coast Regional Development Council. |

APPENDIX 1

# THE WEST COAST REGION



## APPENDIX 2. PRESS RELEASE (4 August 1987).

### ALTERNATIVE USE OF WEST COAST INDIGENOUS FORESTS. SURVEY OF HARVESTERS, PROCESSORS AND USERS.

Research by post-graduate student Andrew Tilling at the School of Forestry, University of Canterbury promises to throw light on the future development opportunities that can be derived from the West Coast's indigenous forests. The aim is to see whether it is possible to both respect the environment and sustain and promote development opportunities.

The research is taking place against the on-going controversy over the future use of native forests on the West Coast. On the one hand there have been claims that these forests are a priceless national asset, which should be preserved. On the other hand there are those who want to continue making a living from these forests and are opposed to the "locking-up" of these resources. In reality, options are often not clear cut, though extremists on both sides seldom acknowledge this. This is partly because insufficient effort has been made to show what has and can be done. Hence the purpose of the research.

Despite some people's perceptions, there are some developments on the West Coast that are environmentally sound and financially viable. These and other forest-based uses are being evaluated by Andrew Tilling, a planner currently studying for a doctorate at the School of Forestry. He is about to commence a survey of commercial harvesters, processors, tourist operators and craftspeople who derive a living directly from native trees and forests, such as those involved in hunting, moss gathering, beekeeping, weaving and basket-making. His interest is in "special" or alternative forest products as up to now little credit and weight has be given to these. Thus the survey will not cover the timber industry.

About 200 people from Karamea to Haast will be interviewed to find out who is typically involved in these forest-based industries, the nature of the work, the skills required, financial rewards, resource opportunities and obstacles to future development Furthermore, in the light of chronic unemployment problems on the West Coast, an assessment of future jobs prospects will be made. Hence, apart from being of regional and national interest, the research should be of direct benefit to local people.

The questionnaire survey, which begins in the first week in August and runs until the end of the year, will be conducted by Mr. Tilling personally. He stresses that answers will remain anonymous and that no sensitive personal details or financial records will be revealed to third parties, government or private organisations. Results will only be

presented in summary form. Mr Tilling can be contacted at the School of Forestry, University of Canterbury, Private Bag, Christchurch, phone 482-009 ex 8124 or whilst on the Coast through the West Coast United Council, P O Box 361, Greymouth, phone 7975.

## APPENDIX 3. SURVEY QUESTIONNAIRE.

QUESTIONNAIRE No:_____

### SURVEY OF ALTERNATIVE USE OF W. COAST INDIGENOUS (NATIVE) FORESTS.

**N.B. Questionnaire to be answered by proprietor or principal operator.**

Respondent's name/organisation_____
St/PO_____
Location_____
Phone No_____

**For each question, please either tick the appropriate box or write in the answer.**

Q.1(a) **What kind of indigenous forest-based activity or activities (other than sawn timber production) are you involved in?**

Animal products:

| Deer | goats | possums | honey | other (please specify) |
|---|---|---|---|---|
| | | | | |

Vegetative products and derivatives

| Nursery and household plants | sphagnum | mushrooms | other (specify |
|---|---|---|---|
| | | | |

| Craft Products | Tourism |
|---|---|
| | |

**IF NO LONGER INVOLVED IN ANY OF THE ABOVE ACTIVITIES PLEASE ANSWER THE FOLLOWING QUESTION AND RETURN THE QUESTIONNAIRE IN THE PRE-PAID ENVELOPE:**

(b) **Why are you no longer involved?**

_____
_____
_____
_____

Q.2. **Which of the following functions best describe your forest-based activity/activities?**

**SPECIFY FOR EACH ACTIVITY**

Activity

_____ **Grower**
_____ **Trapper**
_____ **Harvester**
_____ **Processor/Manufacturer** (i.e. converting product into another state)
_____ **Exporter**
_____ **Other (please specify)** _____

Q.3. **Please describe how you use the forest-based resource in your operation(s).**
e.g. grow plants from seeds; extract honey, wax and propolis and make mead.

_____
_____
_____

Q.4. **What plant species or natural product of native forests is important to your activity? Please explain**

(e.g. kamahi; rata honey; rimu for tables; podocarp seeds; shiitake mushrooms)

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Q.5. **Is there any special advantage or disadvantage of undertaking this activity on the West Coast?**

Advantage _____Yes ____No Disadvantage ___Yes ____No

**IF 'YES' PLEASE GIVE REASON FOR EACH ACTIVITY**

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Q.6. **What do you particularly like and dislike about your forest-based activity?**

**IF INVOLVED IN MORE THAN ONE GIVE REASONS FOR EACH ACTIVITY**

| LIKES | DISLIKES |
|---|---|
| | |
| | |
| | |
| | |

Q.7. **Apart from being a source of income, are there any aspects of the forest environment that you especially enjoy?**

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Q.8. **How long have you been involved in your forest-based activity?**

**INDICATE FOR EACH ACTIVITY IF INVOLVED IN MORE THAN ONE.**

| Activity | Years | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *e.g. Moss* | < 1. | 1-<2. | 2-<3. | 3-<4. | 4-<5. | 5-<10. | 10-<15. | 15 and over |
| Deer | | | | | | | | |
| Goats | | | | | | | | |
| Possums | | | | | | | | |
| Honey | | | | | | | | |
| Nursery& household plants | | | | | | | | |
| Moss | | | | | | | | |
| Mushrooms | | | | | | | | |
| Craft prods | | | | | | | | |
| Tourism | | | | | | | | |
| Other (please state | | | | | | | | |

Q.9. **Have you sought any advice in relation to this/these activities?**

_____Yes. _____No

**IF YES: Who did you speak to?**
_____Relative
_____Friend
_____Professional adviser e.g. M.A.F.
_____Financial adviser e.g. Bank manager; accountant
_____Agent i.e. buyer for a company
_____Other **please specify**_____

Q.10. **How many hours per week on average do <u>you</u> work during <u>each</u> month of the year?**

**(INDICATE FOR EACH ACTIVITY AND FOR EACH MONTH).**

| Activity | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *e.g.Moss* | *50* | *45* | *43* | *30* | *20* | *10* | *15* | *20* | *25* | *30* | *35* | *45* |
| Deer | | | | | | | | | | | | |
| Goats | | | | | | | | | | | | |
| Possums | | | | | | | | | | | | |
| Honey | | | | | | | | | | | | |
| Nursery& household plants | | | | | | | | | | | | |
| Moss | | | | | | | | | | | | |
| Mushrooms | | | | | | | | | | | | |
| Craft prods | | | | | | | | | | | | |
| Tourism | | | | | | | | | | | | |
| Other (state) | | | | | | | | | | | | |

Q.11..**What quantity/quantities of natural products did you collect and use in the year ended 31 March 1987. And in 1986 and in 1985?**

| | Year | | |
|---|---|---|---|
| | 1986-87. | '85-86. | '84-85. |
| <u>Animal products</u> | | | |
| For live sale (number/year)_____ | | | |
| Skins (number/year)_____ | | | |
| Carcasses for sale (number/year)_____ | | | |
| Velvet from feral animals (kg/year)_____ | | | |
| Honey (extracted) (kg/year)_____ | | | |
| Other beehive products for sale (kg/year)_____ | | | |
| Other **(please state)**_____ | | | |
| <u>Veg. products and derivatives.</u> | | | |
| Seeds (kg/year)_____ | | | |
| Live nursery plants (number/year)_____ | | | |
| Moss/flax/mushrooms etc (wet tonnes, kg/year)_____ | | | |
| (dry tonnes, kg/year)_____ | | | |
| Other **(please state)**_____ | | | |
| <u>Craft Products.</u> | | | |
| Timber (cu. metres/year roundwood)_____ | | | |
| (cu. metres/year sawn timber)_____ | | | |
| Other (please state)_____ | | | |
| <u>Tourism</u>.Number of tourists_____ | | | |

Q.12. **Do you have any concern(s) about the continued availability of your forest-based resource?**

_____Yes _____No

**IF YES: What is/are they?**

_____

_____

_____

_____

_____

_____

**IF NOT CONCERNED: Is there any reason(s) why you are not concerned?**

_____

_____

_____

_____

_____

_____

_____

Q.13 **Where are the main markets for your forest-based product(s)?**

**INDICATE FOR EACH PRODUCT IF INVOLVED IN MORE THAN ONE FOREST-BASED ACTIVITY.**

_____

_____

_____

Q.14. **What are the market requirements for your product(s)?**

**INDICATE FOR EACH PRODUCT IF INVOLVED IN MORE THAN ONE FOREST-BASED ACTIVITY.**

_____

_____

_____

Q.15(a) **Which of the following statements best describes the market outlook for your product(s)?**

| Please state for each activity involved in | Very poor | Poor | Average | Good | Very good |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

(b) **Why do you believe this?**

Activity
(Please state)

_____

_____

_____

Q.16. **Please indicate on the following scale the degree of adjustment, if any, you consider your industry needs to make to satisfy market requirements?**

| Activity (please state) | (None) 0 | 1 | 2 | 3 | 4 | 5 (A great deal) |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

**IF SOME ADJUSTMENT IS REQUIRED: What have you in mind?**

**INDICATE FOR EACH FOREST-BASED ACTIVITY.**

_____

_____

_____

_____

_____

Q.17. **Is this.....**

1_____**a private business**
2_____**a public company**
3_____**trust**
4_____**other.(please state)**_____

Q.18. **Who are the principal owners/shareholders?**

_____

_____

Q.19. **Where is the business registered/located?**

_____

_____

_____

Q.20 (a). **Do you plan to continue this activity next season?**

| Activity.(specify). | Yes | No | Unsure |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

**IF 'NO', GO TO Q.20(e)**

**IF UNSURE, GO TO Q.20(g)**

IF 'YES':
(b) Have you any plans to change the scale of your operation

| | Yes | | No |
|---|---|---|---|
| Increase or decrease Scale? | Increase scale | Decrease scale | |
| Activity (please state) | | | |
| | | | |
| | | | |

IF PLANNING TO INCREASE THE SCALE OF OPERATIONS:

(c) What factors prompt you to do so?

Activity (specify)

IF PLANNING TO DECREASE ACTIVITY:
(d) What are the main reasons for this decision?.

Activity (please state)

IF DISCONTINUING ACTIVITY:
(e) Is there any particular reason why you don't plan to continue this activity next season?

Activity (please state)

IF DISCONTINUING OR DECREASING FOREST-BASED ACTIVITY:
(f) Are you interested in other employment opportunities?

_____Yes _____No

IF YES: (a) What would you like to do?

(b) Would you move from or stay on the West Coast?

_____Move _____Stay

Why move/stay?

IF UNSURE ABOUT FUTURE PLANS:
(g) What factors make you unsure about the future of your activity?

Activity (specify)

_____

_____

_____

Q.21. Are there any factors which you think might encourage newcomers to your forest-based activity at present?

STATE FOR EACH FOREST-BASED ACTIVITY

_____

_____

_____

_____

_____

Q.22. Are there any factors which you think might discourage newcomers to your forest-based activity at present?

STATE FOR EACH FOREST-BASED ACTIVITY

_____

_____

_____

_____

_____

_____

Q.23. In your forest-based activity, are you...

Activity Activity,
(state) (state)

_____ working for wages or salary
for whom?
Family_____.Other_____
_____ a contract worker
for whom? Family_____. Other_____
_____ self employed, not employing others
_____ an employer of others in own business
_____ an unpaid worker in family business
_____ other (please state)_____

Q.24. IF YOU ARE AN EMPLOYER:

(a) How many people did you employ in the last financial year (ended 31 March 1987)? And in 1985-86 and in 1984-85?

GIVE FIGURES FOR EACH YEAR AND FOR FULL AND PART-TIMERS (Part-time = less than 30 hrs/week)

| | Full-time | Part-time |
|---|---|---|
| 1986-1987 | | |
| 1885-1986 | | |
| 1984-1985 | | |

(b) **On average how many weeks per year and hours per week did these people work ?**

| | Full-time | | Part-time | |
|---|---|---|---|---|
| | Weeks/Year | Hours/week | Weeks/Year | Hours/weeks |
| 1986-1987 | | | | |
| 1885-1986 | | | | |
| 1984-1985 | | | | |

(b) **Do you have any unpaid help?**

_____Yes..... **IF YES: Whom?** Family member _____
Other_____

_____No

Q.25. **IF AN EMPLOYEE/CONTRACT WORKER:**

**In your forest-based activity, do you work for.....**

1____**a private body/organisation?**
2____**a public body(local or central government.)?**
3____**other (please specify)**_____

Q.26(a). **Please indicate on the following scale the degree of skill necessary for your forest-based activity**

| Activity (state) | (None) 0 | 1 | 2 | 3 | 4 | 5 (a lot) |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

**IF SKILL NEEDED:** (a) **What type of skills are necessary?**

_____
_____
_____

b) **Are people with these skills difficult to find on the West Coast?**

_____Yes _____No

Q.27. **Is your forest-based activity your main occupation?**
_____Yes _____No

**IF NO: What is your main occupation?**

_____
_____

Q.28. **Did you have any <u>other</u> job(s) or other source of income in the year ended 31 March 1987?**

(e.g. third job; investment income; social welfare/unemployment benefit)

_____Yes _____No

**IF YES: What was it/were they?**

---
---
---

Q.29. **Sex**

_____male _____female

Q.30. **What is your present marital status?**

_____never married
_____married, first time
_____remarried
_____separated
_____divorced
_____widowed

Q.31. **Which of the following age groups do you fall in?:**

_____ **under 20 years**
_____ **20-29**
_____ **30-39**
_____ **40-49**
_____ **50-59**
_____ **60-64**
_____ **65 and over**

Q.32. **Where were you born?**

____On the West Coast
____Off the West Coast
____Outside New Zealand

Q.33. **How many years have you lived on the West Coast?**

_____**0-5 years**
_____**6-10 years**
_____**11-less than 15 years**
_____**16-less than 20 years**
_____**21-less than 25 years**
_____**26 years and over**

Q.34. **Do you live on the West Coast by choice?**

_____Yes _____No

**IF YES: Why do you prefer living here?**

---
---

**IF NO: What prevents you from moving?**

---
---
---
---

Q.35. **What qualifications have you obtained since leaving school?**

_____No qualifications since leaving school.
_____Trade, nursing, teachers, technicians certificate or diploma
_____New Zealand Certificate or Diploma.
_____University Certificate or Diploma below Bachelor level
_____Bachelors Degree
_____Post-graduate degree, Certificate or Diploma
_____Other qualifications **please state**_____

Q.36. **What was your personal gross income before tax for the year ended 31 March 1987? Include income from all sources, but exclude business expenses.**

e.g. wages and salaries, social welfare payments, Family care, Family Benefit, interest, dividends, rent commission, fringe benefit and benefits in kind, business and farm income (less expenses), Accident Compensation weekly payments, Bursary, Scholarship and Superannuation.

1 _____**Nil or Loss**
2 _____**$1000 or less per year** (less than $19/week)
3 _____**$1,001- $2,500/ year** ($19 and less than $48/week)
4 _____**$2,501- $5,000/ year** ($48 and less than $96/week)
5 _____**$5,001- $7,500/ year** ($96 and less than $144/week
6 _____**$7,501- $10,000/ year** ($144 and less than $192/week)
7 _____**$10,001- $12,500/year** ($192 and less than $240/week)
8 _____**$12,501- $15,000/year** ($240 and less than $288/week)
9 _____**$15,001- $17,500/year** ($288 and less than $337/week)
10 _____**$17,501- $20,000/year** ($337 and less than $385/week)
11 _____**$20,001- $25,000/year** ($385 and less than $481/week)
12 _____**$25,001- $30,000/year** ($481 and less than $577/week)
13 _____**$30,001- $35,000/year** ($577 and less than $673/week)
14 _____**$35,001- $40,000/year** ($673 and less than $769/week)
15 _____**$40,001- $50,000/year** ($769 and less than $962/week)
16 _____**$50,001 and over per year** ($962 and over per week).

Q.37. **What percentage of the above income came from your forest-based activity/activities?**

**RECORD FOR EACH ACTIVITY.**

_____% of Gross Taxable Income.

_____% of Gross Taxable Income.

**IF NIL TAXABLE INCOME, RECORD PERCENTAGE OF TURNOVER.**

_____% of Turnover

Q.38. **Is there anything further about your forest-based activity/activities that you wish to comment on?**

_____
_____
_____
_____
_____

**THANK YOU FOR YOUR HELP. PLEASE RETURN THE QUESTIONNAIRE IN THE PRE-PAID ENVELOPE. ALL COMPLETED QUESTIONNAIRES WILL GO INTO A DRAW FOR A $100 PRIZE.**

## APPENDIX 4. SUMMARY TABLES.

The following tables provide an overview of demographic variables, likes, dislikes, encouraging and discouraging factors and principal owners. They are analysed by activity group. Since respondents could have been involved in more than one activity, these groups are not mutually exclusive and hence the sum of those involved in the different activities is greater than the total number of alternative forest-based users included in the survey (116).

Appendix 4a: Age

| | Beekeepers | Charcoal maufacturer | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters | Total sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents= | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % | 116 % |
| Under 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 |
| 20-29 years | 0 | 0 | 0 | 11 | 60 | 11 | 0 | 13 | 0 | 38 | 8 |
| 30-39 years | 32 | 0 | 38 | 60 | 20 | 42 | 0 | 43 | 60 | 38 | 42 |
| 40-49 years | 53 | 0 | 50 | 14 | 20 | 33 | 33 | 32 | 40 | 13 | 35 |
| 50-59 years | 11 | 100 | 13 | 9 | 0 | 6 | 67 | 6 | 0 | 0 | 9 |
| 60 years and over | 5 | 0 | 0 | 6 | 0 | 8 | 0 | 4 | 0 | 13 | 4 |

N.B. Figures rounded.
Activity groups not mutually exclusive.

## Appendix 4b: Sex

| | Beekeepers | Charcoal maufacturer | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters | Total Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % | 116 % |
| Male | 84 | 100 | 88 | 100 | 100 | 92 | 100 | 98 | 90 | 100 | 94 |
| Female | 16 | 0 | 13 | 0 | 0 | 8 | 0 | 2 | 10 | 0 | 6 |

N.B. Figures rounded. Activity groups not mutually exclusive.

## Appendix 4c: Marital Status

| | Beekeepers | Charcoal maufacturer | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters | Total sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % | 116 % |
| Never married | 5 | 0 | 25 | 14 | 40 | 14 | 0 | 21 | 10 | 25 | 14 |
| Separated/Divorced | 0 | 0 | 0 | 9 | 0 | 8 | 33 | 6 | 10 | 13 | 6 |
| Widowed | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 13 | 1 |
| Married/remarried | 95 | 100 | 75 | 77 | 60 | 50 | 67 | 70 | 80 | 50 | 79 |

N.B. Figures rounded. Activity groups not mutually exclusive.

Appendix 4d: Place of Birth

| | Beekeepers | Charcoal maufacturer | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters | Total Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 | 1 | 8 | 35 | 5 | 36 | 3 | 47 | 10 | 8 | 116 |
| | % | % | % | % | % | % | % | % | % | % | % |
| On the West Coast | 47 | 100 | 0 | 74 | 80 | 53 | 33 | 43 | 10 | 38 | 47 |
| N.Z. Off the Coast | 37 | 0 | 38 | 23 | 20 | 42 | 33 | 49 | 80 | 63 | 42 |
| Overseas | 16 | 0 | 63 | 3 | 0 | 6 | 33 | 9 | 10 | 0 | 11 |

N.B. Figures rounded.
Activity groups not mutually exclusive.

Buller/Inangahua is known to be favoured by alternative lifestylers, reflected in the 20% overseas born respondents located in this sub-region, against 10% in Arahura and 3% in South Westland. A higher proportion of New Zealanders born off the West Coast was found in South Westland, as shown below:

| | Arahura | Buller/ Inangahua | S.Westland | Total | Percent |
|---|---|---|---|---|---|
| Total respondents = | 48 | 35 | 33 | 116 | 100 |
| | n | n | n | n | % |
| On the West Coast | 27 | 12 | 15 | 54 | 47 |
| N.Z. off the West Coast | 16 | 16 | 17 | 49 | 42 |
| Overseas | 5 | 7 | 1 | 13 | 11 |

Appendix 4e: Years Lived on West Coast

| | Beekeepers | Charcoal maufacturer | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters | Total sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % | 116 % |
| 0-5 years | 0 | 0 | 38 | 3 | 0 | 6 | 0 | 6 | 0 | 13 | 7 |
| 6-10 years | 21 | 0 | 0 | 0 | 20 | 8 | 33 | 4 | 10 | 13 | 9 |
| 11-15 years | 16 | 0 | 38 | 6 | 0 | 11 | 0 | 11 | 30 | 13 | 14 |
| 16-20 years | 5 | 0 | 25 | 3 | 0 | 6 | 33 | 9 | 30 | 13 | 9 |
| 21-25 years | 16 | 0 | 0 | 23 | 0 | 11 | 0 | 19 | 30 | 0 | 12 |
| 26 years and over | 42 | 100 | 0 | 66 | 80 | 58 | 33 | 51 | 0 | 25 | 49 |

N.B. Figures rounded.
Activity groups not mutually exclusive.

There are some important sub-regional differences. Buller/Inangahua and South Westland had a higher proportion of respondents who had lived on the Coast for ten or fewer years, which is consistent with their place of birth shown above.

| | Arahura | Buller/ Inangahua | S.Westland | Total | Percent |
|---|---|---|---|---|---|
| Total respondents = | 48 | 35 | 33 | 116 | 100 |
| | n | n | n | n | % |
| 0-5 years | 6 | 1 | 1 | 8 | 7 |
| 6-10 years | 3 | 4 | 4 | 11 | 9 |
| 11-15 years | 2 | 9 | 5 | 16 | 14 |
| 16-20 years | 6 | 3 | 1 | 10 | 9 |
| 21-25 years | 2 | 4 | 8 | 14 | 12 |
| 26 years and over | 29 | 14 | 14 | 57 | 49 |

Appendix 4f: Qualifications

| | Beekeepers | Charcoal maufacturer | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters | Total sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % | 116 % |
| None | 37 | 100 | 13 | 49 | 20 | 56 | 0 | 57 | 40 | 50 | 47 |
| Trade/NZ/University certificate. | 63 | 0 | 50 | 46 | 60 | 39 | 100 | 38 | 50 | 50 | 46 |
| Bachelors degree | 0 | 0 | 13 | 3 | 20 | 6 | 0 | 2 | 10 | 0 | 4 |
| Post-graduate degree certificate/diploma | 0 | 0 | 25 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 3 |

N.B. Figures rounded.
Activity groups not mutually exclusive.

Appendix 4g: Likes.

| | Beekeepers | Charcoal | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % |
| Money/financial retn/ Economic situation | 11 | 0 | 0 | 34 | 0 | 47 | 33 | 28 | 0 | 25 |
| Independence/ solitude | 42 | 100 | 50 | 26 | 60 | 25 | 33 | 45 | 20 | 38 |
| Being with family/ people- Sociable | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 70 | 0 |
| Interest/satisfaction/ achievement | 68 | 100 | 75 | 31 | 20 | 8 | 0 | 4 | 0 | 13 |
| Identification with natural resource/outdoors | 32 | 0 | 0 | 20 | 20 | 22 | 67 | 49 | 40 | 25 |
| Can do anytime | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 9 | 0 | 0 |
| Relaxing/keeps me fit | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 |
| Its renewable | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 |
| Other/N/A | 26 | 0 | 12 | 36 | 0 | 19 | 33 | 17 | 30 | 38 |
| No particular likes | 5 | 0 | 0 | 8 | 0 | 0 | 0 | 4 | 0 | 25 |

Appendix 4h: Dislikes.

| | Beekeepers | Charcoal | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % |
| Money/financial retn/ Economic situation | 16 | 0 | 0 | 3 | 20 | 8 | 0 | 15 | 20 | 13 |
| Admin/management of resource | 11 | 0 | 0 | 14 | 20 | 8 | 0 | 6 | 20 | 13 |
| Access problems | 0 | 0 | 0 | 3 | 20 | 0 | 0 | 4 | 0 | 0 |
| Weather | 16 | 0 | 0 | 9 | 0 | 14 | 0 | 23 | 20 | 0 |
| Work conditions | 26 | 100 | 75 | 0 | 0 | 32 | 33 | 15 | 0 | 25 |
| Other/N.A. | 11 | 0 | 25 | 6 | 0 | 8 | 0 | 15 | 20 | 0 |
| No particular dislikes | 37 | 0 | 0 | 57 | 40 | 19 | 67 | 43 | 30 | 63 |

Appendix 4i: Encouraging Factors.

| | Beekeepers | Charcoal | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % |
| Money/financial retn/ Economic situation | 0 | 0 | 13 | 9 | 20 | 58 | 33 | 21 | 40 | 0 |
| Interest/satisfaction/ enjoyment/challenge | 0 | 0 | 38 | 0 | 0 | 0 | 33 | 0 | 0 | 25 |
| Availability of resource | 16 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| Fashion/the way to go Imitation | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 0 | 50 | 0 |
| Can start up small/ ease of establishment | 21 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| The outdoor life | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 0 |
| Unemployment situation | 0 | 0 | 0 | 6 | 14 | 0 | 0 | 19 | 0 | 0 |
| Dont know/N.A. | 0 | 100 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 |
| Other | 37 | 0 | 25 | 9 | 0 | 11 | 0 | 9 | 0 | 0 |
| Nothing Encouraging | 47 | 0 | 38 | 71 | 80 | 25 | 0 | 47 | 30 | 75 |

Appendix 4j: Discouraging Factors.

| | Beekeepers | Charcoal | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % |
| Money/financial retn/ Economic situation | 78 | 0 | 75 | 66 | 60 | 17 | 67 | 45 | 30 | 75 |
| Cost of Establisment | 26 | 0 | 25 | 0 | 40 | 0 | 0 | 0 | 0 | 0 |
| Working by oneself/ isolation | 0 | 0 | 13 | 0 | 20 | 0 | 0 | 0 | 0 | 0 |
| Weather conditions | 5 | 0 | 0 | 3 | 20 | 11 | 0 | 13 | 0 | 0 |
| Access to resource | 0 | 0 | 0 | 9 | 0 | 61 | 0 | 19 | 20 | 25 |
| Admin/management of resource | 26 | 0 | 0 | 31 | 0 | 22 | 0 | 9 | 50 | 0 |
| Work conditions | 0 | 0 | 0 | 6 | 0 | 14 | 33 | 38 | 0 | 0 |
| Lack of confidence/ know how | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 6 | 10 | 0 |
| Distance from market/ must have mkt contact | 0 | 0 | 63 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 75 | 17 | 0 | 0 | 0 | 13 | 30 | 0 |
| Nothing Discouraging | 5 | 100 | 0 | 0 | 0 | 8 | 0 | 2 | 0 | 0 |

Appendix 4k: Principal Owners.

| | Beekeepers | Charcoal | Craftsmen | Deer trappers | Goat catchers | Moss harvesters | Nurserymen | Possummers | Guides | Venison shooters |
|---|---|---|---|---|---|---|---|---|---|---|
| Total respondents = | 19 % | 1 % | 8 % | 35 % | 5 % | 36 % | 3 % | 47 % | 10 % | 8 % |
| Self only | 37 | 100 | 50 | 49 | 60 | 33 | 0 | 64 | 10 | 75 |
| Self + spouse/family | 63 | 0 | 50 | 23 | 40 | 53 | 100 | 30 | 60 | 13 |
| Self + other person(s) | 0 | 0 | 0 | 29 | 0 | 14 | 0 | 6 | 30 | 13 |

N.B. Figures rounded

## APPENDIX 5. STATISTICAL TESTS.

### Introduction.

The survey of alternative forest-based users was carried out to cover two main areas of interest. On the one hand, we were concerned with the prospect for employment and income from forest-based activities, other than timber production. Thus, there were a range of economic and market variables that were of interest: market outlook, the adjustment that the industry needed to make to satisfy market requirements, proposed changes in scale of operations, whether advice was sought and the degree of skill necessary to undertake the activity. With these variables, we would obtain an indication of how the future was perceived, what steps respondents were taking to meet anticipated changes and whether a high or low degree of skill was necessary. The latter was of interest if it was found that expansion of activities was possible. Supplementary questions probed the responses to these economic and market variables, providing useful qualitative information (See Appendix 3). On the other hand, we were also interested in the nature and character of alternative forest-based respondents *per se*. We thus included demographic questions on variables such as age, place of birth and marital status.

Although these two strands of interest were important in their own right, the opportunity existed to see if there were any relationship between the demographic and the economic and market variables. As these relationships could not be easily juggled in the mind, because of the number of variables involved, it was decided to use an objective method, specifically canonical correlation. This technique was chosen because we wanted to analyse the relationship between two sets of variables, to find combinations of optimum variables. Each set can contain several sets of variables, though one set can be reduced to just one variable, in which case the analysis strictly becomes a multiple regression. Although multiple regression is normally used to predict behaviour, we were not so interested in the inferential properties of the technique, although, in a strict sense, a number of multiple regressions were carried out. However, these analyses were carried out in the normal manner using the canonical correlation procedure on SAS (SAS Institute Inc., 1985). Thus, the results show the degree of correlation of the outcome variable with the whole set of background variables. These have been expressed as a linear equation for the sake of convenience, instead of as a series of tables. As we cannot extrapolate the results to populations outside the Coast or outside those we dealt with, the predictive properties are limited. For our purposes, the descriptive aspects of canonical correlation and the special cases of multiple regression are sufficient.

Because of the small number of respondents involved in the activity groups, multivariate statistical analyses were only attempted on data for beekeepers, moss harvesters/producers, possummers and deer trappers. The former was the smallest group with 19 respondents.

We obviously do not show non-significant results. However, it is worth reflecting on the fact that though we generally expected a significant relationship between the background demographic variables and the outcome economic and market variables, only one statistically significant result was obtained, for moss harvesters/producers, and even in this case the coefficient for one of the variable market outlook had a low weight (see Appendix 5e, below). In all other cases tested, no significant relationships were found between socio-economic variables and respondents' perception of market outlook and the amount of adjustment thought necessary to satisfy market requirements. However, it was discovered, during the course of the survey and subsequently from commodity traders and trade journals, that respondents are bombarded with information about the state of their respective industries. Buyers send out information on sales volumes, prices and forecasts. Agents in the field reiterate the received wisdom and trade publications and business newspapers are yo-yos of raised expectations and subsequent disasters. It is no wonder that demographic variables were generally insignificant determinants of what respondents thought about market factors. The medium is the message (McLuhan, 1967).

## Appendix 5a Beekeepers' Yield per Hive.

A special case of canonical correlation, multiple regression, was used to analyse the relationship between respondents' demographic variables of age (AGE) place of birth (POFB) qualifications (QUALS) number of years resident on the West Coast (YRSWC) years involved in beekeeping (YRSINV) total number of jobs/sources of income (TOTJ) and income dependence on beekeeping (YDEP) with yield per hive (AVYDPHV).

The correlations between three demographic variables, years lived on the West Coast, years involved in beekeeping, and place of birth with average yield per hive were moderate (0.70, 0.66 and 0.64 respectively).[1] Those between the other demographic

---

1 The following scales were used:
AGE: 1 = <20 yrs; 2 = 20-29; 3 = 30-39; 4 = 40-49; 5 = 50-59; 6 = 60 and over
POFB: 0 = Overseas; 1 = N.Z., off the West Coast; 2 = On the West Coast (This scale reflected our interest in those born on the West Coast, so we assigned them a score of 2)
QUALS: 0 = None; 1= Trade/NZ Certificate/University certificate; 2 = Bachelor degree; 3 = Post graduate degree, diploma or certificate.
YRSWC: 1 = 0-5 Yrs; 2 = 6-10; 3 = 11-15; 4 = 16-20; 5 = 21-25; 6= 26 years and over.
YRSINV: 1 = Under 5 years: 2 = 5 to <10: 3 = 10 to <15; 4 = 15 years and over
TOTALJ: 1= 1; 2= 2; n = n
YDEP: 0 = nil: 1 = <25%; 2 = 25-49%; 3 = 50-74%; 4 = 75% and over.

variables, total number of jobs/sources of income (TOTALJ), income dependence (YDEP), qualifications (QUALS), and age (AGE) with yield per hive were low (-0.33, 0.2, -0.17 and -0.03 respectively).

However, when a linear combination of these background variables were regressed with average yield per hive, the variable YRSWC turned out to be much more important than the others, as shown by the weightings in the following linear equation:

Y = 0.095 AGE + 0.246 POFB + 0.779 YRSWC + 0.229 YRSINV + 0.370 QUALS - 0.276 TOTALJ - 0.144 YDEP

The weighting of the variables are of interest, as no prediction is intended. As these are standardised variables, we see that the number of years resident on the West Coast accounts for by far the greatest variation in Y (yield per hive). In other words, those who had a high income dependence on beekeeping tended to have been resident on the Coast for some years and to have been involved for a lesser period and to have fewer other jobs.

The probability level for the null hypothesis that this correlation is 0 in the population is 0.048. This statistically significant result was particularly remarkable, given the low number of beekeepers included in the statistical analysis (19).

As $R^2 = 0.72$, 72% of the variation in Y is accounted for by the background variables, ranked, in order of importance, as YRSWC (1), QUALS (2), TOTJ (3), POFB (4), YRSINV (5). However, the correlations between the background variables POFB and YRSINV and the canonical variable was found to be much higher than those for QUALS and TOTJ, meaning that there was less scatter along the axis of the regression line.

## Appendix 5b Income Dependence on Beekeeping.

A multiple regression technique was used to analyse the relationship between respondents' demographic variables of sex, marital status, age, place of birth, qualifications, number of years resident on the West Coast and years involved in beekeeping with income dependency on beekeeping (YDEP). A univariate correlation between these background variables and the outcome variable gave the following result:

| | YDEP |
|---|---|
| SEX | -0.157 |
| MARITAL | 0.189 |
| AGE | 0.336 |
| POFB | 0.515 |
| YRSWC | 0.307 |
| YRSINV | O.557 |
| QUALS | -0.671 |

When the linear combination of the set of these background variables was regressed with income dependence, QUALS and POFB were confirmed as being of greatest importance.[2] This is shown by the weightings in the following linear equation:

Y = 0.178 SEX + 0.088 MARITAL + 0.156 AGE + 0.74 POFB - 0.399 YRSWC - 0.013 YRSINV - 0.839 QUALS.

The probability level for the null hypothesis that this correlation is 0 in the population is 0.026, which is statistically significant, especially as only 18 beekeepers were included in the analysis.

73% of the variation in Y was accounted for by these background variables ($R^2 = 0.73$) of which QUALS and POFB had by far the the highest weights. Both of these variables were highly correlated with the linear set of their demographic variables, as was YRSINV, meaning there was less scatter about the axis of the regression line for these variables than for the others.

To summarise, those with a high income dependence on beekeeping tended to have been born on the West Coast and to have few post-school qualifications and to have lived there for a relatively short period and to be relatively young. It should be stressed that these are relative results, as a shorter period of residency could still be a long time, bearing in mind that beekeepers were a relatively older group of alternative forest-based users. Hence, the majority of those "younger" beekeepers with a relatively high dependence on beekeeping were found, in a subsequent analysis of the questionnaires, to be 40-49 years of age.

## Appendix 5c Income Dependence on Possumming.

Another special case of canonical correlation, a multiple regression analysis of the relationship between respondents' demographic variables of age, place of birth, qualifications, number of years resident on the West Coast, years involved in possumming and total jobs with income dependency on possumming was carried out.

Univariate correlations between these demographic factors and income dependency were low, as shown overleaf:

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2 Additional scales used, to those mentioned in footnote 1, above, were:
SEX: 0 = Male; 1 = Female
MARITAL: 0 = Never married; 1 = Separated/divorced: 2 = Widowed; 3 = Married/remarried.

| | YDEP |
|---|---|
| AGE | -0.120 |
| POFB | 0.119 |
| YRSWC | -0.209 |
| YRSINV | -0.003 |
| QUALS | -0.023 |
| TOTALJ | -0.348 |

However, a statistically significant result was obtained (Pr > F = 0.047) for the correlation of a linear set of these demographic variables with low income dependence (-1), shown in the following linear equation:

Y = 0.237 AGE - 0.625 POFB + 0.564 YRSWC + 0.076 YRSINV + 0.077 QUALS + 0.848 TOTALJ

In other words, those with many jobs who had lived on the Coast for a moderate period and who tended not to be West Coasters by birth, had a low income dependence on possumming. One would have expected that those with a large number of jobs to have a low income dependence on possumming, but it would have been difficult to have predicted that those who were not Coasters by birth would have been less dependent on the activity. This probably reflects the fact that "locals" had lived a longer period close to the forest and took up the activity from early childhood days.

However, a comparatively small amount of the variation in the outcome variable (income dependence) was explained by the predictor variables, as the $R^2 = 27\%$, i.e. they are not a good overall predictor of income dependence.

## Appendix 5d Income Dependence on Moss Production.

The relationship between respondents' demographic variables of age, place of birth, qualifications, number of years resident on the West Coast, years involved in moss production and total jobs with income dependency on moss was determined by a special case of canonical correlation, multiple regression.

The highest two-way correlations between the demographic factors and income dependence were moderately high, with total jobs and years involved having the highest correlations, as shown below.

| | YDEP |
|---|---|
| AGE | -0.113 |
| POFB | 0.118 |
| YRSWC | 0.134 |
| YRSINV | 0.454 |
| QUALS | -0.128 |
| TOTALJ | -0.588 |

However, the overall correlation of the set of these demographic variables with income dependence was 0.73, which was substantially higher than the between set, univariate correlations shown above. This was a highly statistically significant result (Pr > F = 0.001). The relative importance of the demographic variables is shown in the following linear equation:

Y = -0.228 AGE + 0.188 POFB + 0.271 YRSWC + 0.311 YRSINV - 0.157 QUALS - 0.816 TOTALJ

As these are standardised scores, the importance of TOTALJ is obvious: it has by far the greatest weight. In other words, those with few other jobs, who tended to have been involved for a moderate period had the greatest income reliance on moss production. 53% of the variation in Y was accounted for by these background variables, so they provide a moderate predictor of income dependence. Nevertheless, the result is intuitively sound, as in moss production, more than in any other alternative forest-based activity, it was possible to make a full-time living. Hence, the need for other jobs was less.

## Appendix 5e Canonical correlation between demographic variables and market variables for moss harvesters/producers.

A canonical correlation between demographic variables of age, place of birth, years involved in the activity and income dependence and market variables, advice sought (ADVSGHT) market outlook (MKTOUT) degree of adjustment needed to satisfy market requirements (ADJST) and plans to change the scale of operations (CHNGSCL) was carried out.[3]

The highest between set (univariate) correlation was -0.531, between YRSINV and ADVSGHT, followed by -0.391 between YDEP and ADVSGHT.

However, the first canonical correlation of the set of these variables was 0.719; substantially higher than the between set correlations.

This was statistically significant (Pr > F = 0.031). The other canonical correlations were not worth considering as the probability levels were high (0.38; 0.35 and 0.38 respectively, i.e. 38% and 35% chance that there were no correlations).

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3 The following scales were used for market variables:
ADVSGHT: 1= Yes; 0 = No
MKTOUT: Very poor = -2: Poor = -1; Average = 0; Good = +1; Very good = +2
ADJST: 0 (none) = 0; 1 =1; 2 = 2; 3 = 3; 4 = 4; 5 (a great deal) = 5
CHNGSCL: Increase = +1; No change = 0; Decrease = -1

The relative importance of the variables can be deduced from their standardised canonical coefficients. For the demographic variables these were:

| | DEMOGR1 |
|---|---|
| AGE | -0.327 |
| POFB | 0.279 |
| YRSINV | 0.669 |
| YDEP | 0.413 |

The standardised canonical coefficients for economic market and market factors were:

| | ECONMKT1 |
|---|---|
| ADVSGHT | -0.852 |
| MKTOUT | 0.085 |
| ADJST | 0.445 |
| CHNGSCL | -0.250 |

Expressing these as a linear equation:

-0.852 ADVSGHT + 0.085 MKTOUT + 0.445 ADJST - 0.25 CHNGSCL = -0.327 AGE +0.279 POFB + 0.669 YRSINV + 0.413 YDEP

The most weight is on ADVSGHT for the dependent variables and YRSINV for the predictor variables. This result is intuitively correct: one would expect that with greater experience gained from years involved with an occupation, the less advice that would be sought and given the state of the moss industry, that those with experience are beginning to get concerned. From the survey results, adjustment in the moss industry was largely seen to be in the hands of producers/harvesters and resource managers. 44% of those that thought that some adjustment was necessary mentioned the need to maintain or improve the quality of the dried moss and 31% said there was a need for better management/control of harvesting.

## APPENDIX 6. FINANCIAL ANALYSIS.

Financial statements were examined in detail, as explained in Chapter 3. The analysis was based on financial returns which were prepared for tax purposes for the period between 1984/85-1986/7, in most cases.

A summary of the financial position in four alternative forest-based activities is presented below.

Appendix Table 6a. Financial Analysis.

1987 Dollar Values•

| | Beekeepers | Moss Individuals | Moss Factories | Moss Industry (all) | Possummers | Craft Wood-workers |
|---|---|---|---|---|---|---|
| Net Sales | 33,784 | 13,514 | 657,556 | 306,260 | 12,214 | 13,415 |
| Less Cost of Goods Sold | 7,151 | 156 | 712 | 409 | 0 | 4,746 |
| = Gross Profit | 26,633 | 13,358 | 656,844 | 305,851 | 12,214 | 8,669 |
| Less Operating Expenses | 20,570 | 4,227 | 185,919 | 112,788 | 3,062 | 6,392 |
| = Operating Income | 6,063 | 9,131 | 470,925 | 193,063 | 9,152 | 2,277 |
| Less other expenses (deprecn) | 2,917 | 736 | 8,786 | 4,395 | 125 | 1,796 |
| = Net Income before tax | 3,146 | 8,395 | 462,139 | 188,668 | 9,027 | 481 |
| Total Av. Assets | 111,089 | 15,367 | 164,502 | 83,156 | 9,418 | 33,454 |

• N.B. Average 1985-87

Wherever possible, an average of the three year period was computed in order to smooth out annual fluctuations in costs and returns. This is very necessary, as some beekeepers and craft woodworkers for instance buy in stock to last for a considerable period, whereas moss producers and possummers hardly carry any at all. Whilst it is necessary to reveal these different operating practices, comparing single years can be very misleading.

In the above table, the average turnover for each activity is shown as net sales (net of GST). At the beginning of each financial year an assessment is made of stocks carried over from the previous year (opening stocks) to which current stocks incurred during the years operations are added (purchases). At the end of the financial year stocks are assessed again (closing stocks). These are deducted from the sum of opening stocks and purchases to give the Costs of Goods Sold. Net Sales less Cost of Goods Sold gives Gross Profit. Operating Expenses are administrative and trading expenses incurred during the year. Deducting these gives Operating Income from which depreciation is deducted to give Net Income Before Tax. Average Assets are shown separately and have been calculated at market value. They include the value of land and buildings solely associated with the operation (e.g. they exclude houses) plant and equipment, motor vehicles and inventories (Cost of Goods Sold). With this information, it is possible to gain an insight into various aspects of how the four activities were managed and their ability to earn profits, which are necessary to generate cash and working capital, and hence finance future operations. To do this three profitability ratio were calculated.

The first analysis, Return on Sales, is computed by expressing Net Income Before Tax as a percentage of Net Sales and is a measure of the profitability of each sales dollar (Kiger, *et al*, 1984). Thus, return on sales was highest for possummers: for each sales dollar they earned 73.9 cents.

Appendix Table 6b Return on Sales

| Beekeepers | Moss Individuals | Moss Factories | Moss Industry | Possummers | Craft Wood-workers |
|---|---|---|---|---|---|
| 9.3 % | 62.1 % | 70.3% | 61.6 % | 73.9% | 3.6 % |

Gross profit rate is another measure of the profitability of each sales dollar, calculated by expressing Gross Profit as a percentage of Net Sales. It is an indicator of the 'profit' generated from a sale to cover selling and operating expenses (Kiger, *et al*, 1984). The results for the four activities is shown below.

Appendix Table 6c Gross Profit Rate

| Beekeepers | Moss Individuals | Moss Factories | Moss Industry | Possummers | Craft wood-workers |
|---|---|---|---|---|---|
| 78.8 % | 98.8 % | 99.9 % | 99.9 % | 100.0 % | 64.6 % |

Finally, a comparison is presented of the rate of return on total assets. This measures how productively total assets were employed and is calculated by expressing net income before tax as a percentage of total assets. The rate of return can be broken into its components: Return on Sales multiplied by Total Assets Turnover (the latter being Net Sales divided by Total Assets), as shown below:

Appendix Table 6d Rate of Return on Total Assets

| Beekeepers | Moss Individuals | Moss Factories | Moss Industry | Possummers | Craft Wood-workers |
|---|---|---|---|---|---|
| 2.8 % | 54.6 % | 280.9 % | 226.9 % | 95.8 % | 1.4% |

We should reflect on the ramifications of the large difference in the rate of return on total assets between beekeepers and craft woodworkers on the one hand and moss producers and possummers on the other. Possummers and moss harvesters did either nothing or very little to enhance the resource that they used. They were primary resource harvesters, reliant on what nature provided. They could make large profits provided they could get access to the resource and have the volume throughput. But, they were not investing capital to ensure the long term sustainability of moss or increased

productivity and quality of possums, as their investment was largely in plant and equipment to process their respective resources.

Sustained-use of natural resources was not threatened by beekeeping or craft woodworking, as demands were very modest. Whilst twelve beekeepers were not managing their hives very well, as noted in paragraph 5.5.2 in the main body of the text, most could substantially improve their yields. Similarly, woodworkers were not substantially constrained by resource availability, although high quality heart timber was becoming difficult, but not impossible, to locate. In these circumstances, it might be concluded that lower profitability rates, based on sustained-use, are better than those which are based on exploitation and resource depletion. Whether these activities with lower profit rates can survive economically is another matter.